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# THE FIRST YEARBOOK

OF THE

## NATIONAL SOCIETY FOR THE SCIENTIFIC STUDY OF EDUCATION

SOME PRINCIPLES IN THE TEACHING OF HISTORY

BY

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VASSAR COLLEGE

A PAPER PREPARED FOR DISCUSSION AT THE GENERAL MEETING OF THE SOCIETY  
IN CONJUNCTION WITH THE MEETING OF THE DEPARTMENT OF  
SUPERINTENDENCE AT CHICAGO, THURSDAY,  
FEBRUARY 27, AT 2:00 P.M.

A SPECIAL MEETING FOR THE ACTIVE MEMBERS OF THE SOCIETY WILL BE  
HELD FRIDAY, FEBRUARY 28, AT 9:30 A.M.

EDITED BY

CHARLES A. McMURRY

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## NOTICE

THE active members of the Society are specially requested to make a careful study of this paper on history before coming to the Chicago meetings.

It is suggested that active members institute small meetings at home for preliminary study of the paper.

The second part of the Yearbook will be published and sent out to members previous to the meeting of the National Educational Association at Minneapolis in July. An important paper on Geography, its scientific aspects, has been arranged for.

Any of the previous publications of the Herbart Society, or the bound volume of the five Yearbooks and Supplements can be obtained from the Secretary.

CHARLES A. McMURRY.

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## INTRODUCTORY NOTE.

The following suggestions in regard to some of the principles underlying the teaching of history are submitted to the members of the National Society for the Scientific Study of Education, less with the desire that these suggestions should be adopted and followed by them than with the hope that, through the consideration of them by that body, other and truer principles may be formulated for the help and guidance of teachers of history.

I have not hesitated in several instances to plagiarize from myself, and to incorporate in the paper several passages that have appeared elsewhere.

L. M. S.

POUGHKEEPSIE, N. Y.  
January 9, 1902.



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# THE FIRST YEARBOOK

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## SOME PRINCIPLES IN THE TEACHING OF HISTORY.

### I.

#### THE RECORD AND THE RECORDER.

*What is history?*

"A narrative, oral or written, of past events; a story."—*Century Dictionary*.

Innumerable definitions of history have been made from the standpoint of the historian, the poet, the *littérateur*, the philosopher,<sup>1</sup> but the one given may be accepted as a working definition that will fulfill all practical needs. It involves three factors:

Something to be narrated, or recorded.

A narrator, or recorder.

A narrative, or record.

*The subject of the record.*—This may be classed under three heads: Inorganic life—the record which is given by geology.

<sup>1</sup> "History is humanity becoming and being conscious of itself."—*Droysen*.

"History is only the utilization of documents."—*Langlois and Seignobos*.

"History is the essence of innumerable biographies."—*Carlyle*,

"History is past politics; politics is present history."—*Freeman*.

"History is a voice forever sounding across the centuries the laws of right and wrong."—*Froude*.

"History is the cyclic poem written by Time upon the memories of men. The Past, like an inspired rhapsodist, fills the theater of everlasting generations with her harmony."—*Shelley*.

"Facts are not the dross of history, but the true metal, and the historian is a worker in that metal. He has nothing to do with practical politics, or with forecasts of the future."—*Birrell*.

"History is philosophy teaching by example."—*Bolingbroke*.

"Universal history is the unfolding of spiritual being in time, as Nature is the unfolding of the divine idea in space. History is progress in the consciousness of freedom."—*Hegel*.

Plant and animal life—the record of which is given by paleontology.

All human activities—the record of which is given by art, literature, and innumerable other agencies.

*The recorders.*—These may be classed as,

The unconscious and impersonal agents—nature, language, tradition.

The conscious agents—the artist, the annalist.

*The record.*—This may be classed according to the place where it has been made :

It has been left on the surface of the earth by unconscious physical agents. The study of this record gives us the subjects of geology and geography.

It has been left on the physical features of man. This record forms the basis of the science of anthropology.

It has been made by spoken and written language. The record thus left is the subject of the science of philology.

A record has been left by tradition, by folk lore, by institutions that have long since passed away except in remote places, and by existing forms and ceremonies, the original meaning of which has been long since forgotten. These are the records left by recorders acting unconsciously and collectively. The sciences treating of these various subjects have been as yet but imperfectly defined.

Records have been preserved through monuments. These are found in architecture, sculpture, casts, paintings, mosaics, coins, medals, seals, gems, cameos, heraldic emblems, armor, illuminated manuscripts, tapestries, rugs, wood carving, wood inlaying, and similar forms of art. These are the records made by the artist or by the artisan, acting often unconsciously and subordinating accuracy of historical fact to artistic presentation. Since the primary object of the artist has been artistic rather than historical, the record left by him has often been incidental to his main purpose. The term art may be used to cover all the subjects treated in this form of the record.

A record has been left in all forms of literature, as in poems, dramas, novels, and essays. In these, as in art, the record has in general been an unconscious one. It has been often not technically a record but rather an instantaneous photograph of manners and customs.

A record has again been made through laws, charters, and other

official documents—a record that in its turn is a photograph of the institutions of the period.

Finally, a written record has been preserved that gives consciously an unembellished statement of facts and events. This record may have been written with a tool on stone or metal—its interpretation is a work of epigraphy. It may have been written with a pen on parchment—the study of this record is made in paleography. It may have been printed from type—but no word as yet defines in precise terms this form of the record and distinguishes it from history on the one hand and from literature on the other.

It is thus necessary to distinguish between the record and the recorder, on the one hand, and history and the historian on the other hand. The record is the original portrayal of events that has been made quite as often unconsciously as consciously; it is the raw material from which the historian constructs history. The historian may in a sense be considered an interpreter or a translator, since he judges in regard to the authenticity of the record, compares different records, and fuses them all into an organic history. Technically any agent making a record may be called an historian; in this sense the impersonal agents, as nature and language, may be called historians. But the record to which the term history may be applied is that made by the historian who consciously gathers together from every source the primary records made by other agencies, and combines them into an orderly systematic whole. He makes of the various records that may have no organic relation to each other an organic history. History proper may thus be considered derived history as distinguished from the primary record.

The sources of historical knowledge, therefore, that the historian has at his command are physical, linguistic, social, monumental, and written. The historian uses all of these sources, but naturally finds the greater part of his material and that which bears most directly on his work, in the monumental and in the written record. These two classes of records often supplement each other; sometimes it is the monumental record alone that has survived, while again that has perished, and the historian must depend entirely on the written record. The historian is on the surest footing when he finds both written and monumental record. The parallelism and interconnection between the two may be illustrated by the following examples:

*The Trojan War.*—The literary record that has survived is found

in Homer and in Virgil. These poems give a series of brilliant pictures of life in a period long antedating that in which the poems were written. The records were handed down by tradition and by written evidence that has long since perished, and hence they cannot be considered an exact scientific account of the events of the period described.<sup>1</sup>

The monumental record of the period is being brought to light through the uncovering of buried cities, palaces, temples, tombs, and other architectural remains of an early civilization, the literary records of which have for the most part perished.

*The Battle of Salamis.*—A literary record is given in the accounts of Æschylus and of Herodotus.

The modern study of the topography of the scene of the battle modifies and corrects the theory of modern historians which is commonly supposed to be supported by the language of Herodotus, but is proved to be at variance with it.<sup>2</sup>

*The Dacian War.*—The literary record has entirely perished.

The monumental record is found in the bas-reliefs of Trajan's column.

*The Norman Conquest.*—The literary record is given by Ordericus Vitalis—the greater part of it written some years after the events described.

The monumental record is found in the Bayeux tapestries—contemporaneous accounts woven by Queen Matilda and her handmaidens.

*Mediæval Italy.*—"We must study the Pisan Campo Santo with Dante in our hands."<sup>3</sup>

It is evident from these illustrations, which could be multiplied indefinitely, that although "the development of literature and art does not indeed always proceed on the same lines or at the same pace,"<sup>4</sup> yet each supplements and corrects the other. In the history of Greece, the literary and the monumental record supplement and corroborate each other; in the history of Rome, there are serious gaps in the literary record which often leaves the monumental record the main dependence ;

<sup>1</sup> For the sources used by Virgil, see NETTLESHIP, *Essays in Latin Literature*, Chap. VI, Pt. II.

<sup>2</sup> W. W. GOODWIN, "The Battle of Salamis," in *Papers of the American School of Classical Studies at Athens*, I, 239-62.

<sup>3</sup> SIR CHARLES NEWTON, p. 25.

<sup>4</sup> ERNEST A. GARDNER, in D. C. HOGARTH, *Authority and Archaeology*, p. 266.

in mediæval history the two run parallel ; in modern history the main dependence is on the printed record. The written record is perishable, hence the great dependence on monumental records for early history. But the written record is often the only one that has been consciously made and there has therefore been a tendency towards its almost exclusive use wherever it has been available.

The historian, if his work is to be of value, must have full knowledge of the interdependence of these various classes of records, and of the laws and principles that govern their use. The teacher of history, if his work is to be successful, must appreciate the difference between the primary records and the history derived from them and thus not confuse and confound the two either in his own mind or in his classroom work.

## II.

### THE HISTORIAN IN RELATION TO THE SELECTION AND USE OF MATERIAL.

It has been seen that the historian has at his command a vast amount of material from which to derive his own work. It is, in general, impossible, even in the preparation of a single monograph, to use all of the material available, and hence the question as to what principles are to be used in making a selection becomes an all-important one. Different methods have at different times prevailed.

In the first stages of writing history, the historian was able, since the field was limited, to collect his own material. The dramatic instinct was strong, while the scientific spirit had not been developed. He therefore used the material that served best this dramatic purpose and concerned himself with the picture he was to present rather than with too close an analysis of the materials of which it was composed. In the selection of these materials, the paramount question was, "Will the result be a vivid picture?"

In the second stage of writing history, the historian had come to perceive that history might serve certain distinct and often personal ends. The invention of printing had focused interest on the printed record and since the critical faculty was still undeveloped, every printed record was accepted at its face value to the neglect of every other form of testimony. Moreover since the end was personal rather than general

the selection of material was governed by the question, "Does this record serve my purpose?"

In the third stage of writing history, an abnormal interest was attached to the discovery of new material. The inadequacy of the printed record had come to be felt and the work of the historian proper was supplemented by that of the historical critic who overthrew the existing printed records but attached a peculiar sanctity to manuscripts, by the archæologist who claimed the entire field for himself and made history proper but a subdivision of Greek pottery and Roman walls, and by the physical historian who explained the battle of Gettysburg by the climatic differences between the Northern and the Southern states, and reduced the results of a presidential election to differences in geological strata. The freshness of the material used came to be of more moment than its authenticity; hence the question of the historian was, "Is this material new?"

In the fourth period the historian has appreciated that he must use both the printed and the manuscript record as well as the record of monuments, but not until each has been subjected to the most searching tests as regards its authenticity and the credibility of the sources on which it is based. Moreover, he realizes that "material monuments take a place, important or unimportant, in the historian's reconstruction of the past according as they can be interpreted well or ill by comparison of the monuments of letters."<sup>2</sup> The first question of the historian of today is, "Is the record true?"

This must be considered, however, only a general statement of the evolution of the attitude of the historian towards his material. Some early historians carefully examined their material on the points of genuineness and truthfulness, while some later historians have used their material to promote political ends. Niebuhr not only subjected the literary evidence used to a critical examination and analysis but he began that use of monumental evidence which was later developed by Böckh and his successors, while Froude, a half century later, has been called, "Indolence in a dozen volumes."<sup>2</sup>

The historian at first used exclusively the written record, but "the proportion between data derived from the ancient historians is continually shifting, and always shifting in one direction (that of existing fact)."<sup>3</sup> That history needs to be constantly rewritten is due among

<sup>2</sup>HOGARTH, p. 14.

<sup>\*</sup> *Letters of John Richard Green*, p. 239.

<sup>3</sup>PERCY GARDNER, *New Chapters in Greek History*, p. 20.



other reasons not only to the growing recognition of the importance of monumental evidence but also to the constantly increasing amount of such evidence. Probably we have now in hand all of the most important literary evidence that has been preserved, but every turn of the spade brings to light fresh monumental evidence. When Greek history was written from the literary evidence alone, the Homeric poems were the last monument of historical activities on the confines between the unknown and the known European past. But the archæologist has at a bound put the milestone back a thousand years before the time of these. The paleontologist reconstructs the history of nature from the remains of fossil animal and vegetable life, and his history is imperfect and incomplete if he neglects either one of these two classes of records. The historian reconstructs the story of the human life of the past from all remaining records and he must use not alone the record left by letters, but that which has survived in the pottery, coins, weapons, tools, and every other evidence of a past life.

It must follow, therefore, that the historian whose work is to stand the tests demanded of it must in the selection of his literary material be governed by the principles and laws that have been deduced by critics and that are embodied in the science of historiography,<sup>2</sup> and that in the selection of monumental evidence he must depend on the similar laws that govern this class of materials.<sup>3</sup>

Thus it is seen that new principles governing the selection of material have from time to time been introduced, and that the most important of these have been the increased reliance placed on monumental evidence, and the subjection of both monumental and literary evidence to the most searching criticism. The task of the historian has therefore been increased immeasurably through these three means—the extraordinary development of interest attached to monumental evidence, the growing amount of literary evidence available, and the necessity of testing all evidence by the principles of scientific criticism.

<sup>2</sup>“Historiography . . . is the sum of the results obtained by the critics who have hitherto studied ancient historical writings, such as annals, memoirs, chronicles, biographies, and so forth.”—*Langlois and Seignobos*, p. 51.

<sup>3</sup>No one science as yet deals with the principles that govern all forms of monumental evidence. It is necessary in dealing with such material to study separately the laws of each branch of monumental evidence, as archæology, numismatics, heraldry, and all its other forms.

The task of the historian has thus become one of such overwhelming magnitude that it is impossible for him to perform it single handed and alone. Division of labor, however, makes it possible for him to depend on the archivist for the work of collecting, preserving, and testing the original record of letters ; on the archæologist for judgment in regard to the value of the record of ancient monuments ; and on the writers of monographs for orderly, systematic arrangement of the materials covering a limited period in time or concerning only a very narrow subject. It is only by availing himself of this principle of division of labor that the historian is able to write any extended history and have it worthy of credence.

But the historian has not only been governed at different times by different principles in the selection of the records on which he must base his work—he has also used both literary and monumental records in such a manner as to produce a literal narration of fact, a dramatic representation of events, a scientific record, a vivid picture of the past, a philosophical discussion, or a symbolic representation.

The literal historian, who has based his work chiefly on the literary records, gives a plain, unadorned chronological survey of the period selected. He may be a mediæval annalist, a Guicciardini, or a modern German historian “who has taken as his life work the history of Germany from 1525 to 1527”—the outcome is in every way the same. The literal historian who writes through monuments has preserved the same spirit in Trajan’s column, in the Vendome column, and in the July column in Paris, in the acres of historical paintings at Versailles illustrating the Napoleonic wars, and in the similar ones in Berlin recording the part taken by Prussia in the Franco-Prussian war.\*

The dramatic historian seizes upon effective incidents and throws them into high relief. The keynote of his work is action, and he concentrates on salient episodes all his force and vigor of description. Carlyle as the type of the dramatic historian finds in literature no less effective a field for his dramatic powers than does St. Gaudens in his memorial bronze in honor of Colonel Robert G. Shaw.

The scientific historian is guided by the principle of absolute accuracy, and is interested in the systematic presentation of facts in

\* These are not to be regarded so much as primary records as they are histories written in the form of monuments.

their true relations, rather than in the effectiveness of the presentation. Stubbs and von Ranke, as the leaders of this school in England and in Germany, find their counterpart in Franz Hals and the Dutch artist historians, who have given us the corporation pieces that are the pride of Haarlem and The Hague.

The picturesque historian portrays the facts with vivid imagery, and presents a series of moving pictures that succeed each other on his canvas with brilliant and telling effect. What Motley has done for the Dutch Republic has been done by Carpaccio for the great city-republic of Venice in the series of pageant pictures that extol the glories of the civic power.

The philosophical historian deals with the broad bases of facts and with the underlying forces that determine events, rather than with the events themselves. Guizot in his *History of European Civilization*, assumes a knowledge on the part of his readers of the chief events in European history, and then interprets for them these events in the light of cause and effect. Kaulbach, in his great series of historical frescoes in the Berlin Museum, has portrayed on six canvases the history of the world, and in the selection of leading figures and in their relation to each other he has summed up the causes and results of great epochs in the world's history.

The symbolic historian makes use of types, and embodies qualities instead of representing the concrete. Naturally, the literary historian is less dependent on this method of using his material than is the historian who writes through art, but for the historian of present society its use is effective and telling. In his great series of symbolic novels, Turgenieff, as the social historian of modern Russia, has symbolized in his leading characters the spirit of unrest, of helplessness, of hope, of ambition, of dependence, of vagueness, and of unreality that characterize the life of Russia today. His work finds its counterpart in that of the artist historian who brings together on a single canvas, or in a single group, the abstract ideas, the controlling principles, the intangible spirit, that have given life to an epoch. The long struggle of Italy for independence from Austria, that lasted for more than half a century is symbolized in the posture of the four lions at the base of the statue erected in Ravenna in honor of those who gave their lives to win that independence. The irreconcilable differences between the nobility, the clergy, and the third estate are represented in the positions of the representatives of the three orders in the statue at

Grenoble commemorative of the beginnings of the French Revolution.\* The frescoes of Ambrogio Lorenzetti in the city hall of Siena portrayed nearly six centuries ago in imaginative allegory the results of good and of bad government in city and in town.

It has thus been seen that from time to time the point of view of the historian has shifted—that while his objective point has at one time been that of telling a striking story, at another time it has been that of accomplishing political or personal ends, or again of presenting fresh material, or still again of telling the absolute truth as he has seen it, regardless of the consequences to himself, to his friends, or to his political, literary, or religious associations. It has also been seen that at all times it has been within the option of both the literary and of the monumental historian to combine his materials so as to present either a literal, dramatic, scientific, picturesque, philosophical, or symbolic representation of the past. There is a history of the historian's selection of material, and a history of the manner in which he has set forth this material.

### III.

#### HISTORY OF HISTORY.

It has been seen that the historian has had at different times different objects in view in his selection of material, and that therefore he has himself had a history. This history of the historian may, in a sense, be considered the history of history on its subjective side, or the history of the manner in which the historian has used his material. On its objective side also history has had a history.

History<sup>†</sup> dealt first with biography. It was a natural result of a primitive stage of society that interest should center around the individual. He might be called Jason, Romulus, Odin, or Arthur, but he was concrete, and the early races, having little interest in the abstract conceptions of state, institutions, or society, handed down by tradition the accounts of the events of his real or imaginary life, especially of those public acts so well performed as to merit for the actor the

\*The posture of the noble expresses contempt for the revolution and all that it signified; the priest with raised hand recognizes, but would avert, the coming disaster; the representative of the third estate, with outstretched hands from which the shackles have fallen, welcomes the future with all of pain or of sorrow that it may bring.

term hero. From these accounts mythology and biography, or the first history, was developed.

In time the individual gathered about himself a court, and the court developed its own life of pleasure and activity. Interest in the individual gradually widened and included all those immediately connected with him. The story might be one of a crusading expedition, or of a tournament at court, or of a contest between neighboring kings, but the scene of action was distinctly larger than before. Out of the biography of an individual the chronicle of a court had been developed.

The age of discovery widened the physical horizon of men, and as a result their activities were correspondingly enlarged. Interest was no longer centered exclusively in court life, for all classes of society shared in the new discoveries and in their results. In time it was realized that people, court, and king are equally parts of the body politic, and as a result the chronicles of court life developed into the history of nations considered as organic wholes.

As long as the interests of a nation were centered in itself, it looked on other nations as military or commercial rivals. But wider acquaintance brought toleration, and toleration was followed by a desire to learn what the experiences of others had been, and to profit by them. The writing of history came to have a more definite end, and the study of the past became less of a passing diversion and more of a serious effort to learn from others. The study of comparative history has followed that of individual nations.

At every stage in the development of history the horizon has been widened until it now embraces the world. From the quadrant of the circle or biography, interest extended to the hemi-circle or court life, then to the three-quadrants or the nation, until now the circle has been completed in the study of groups of nations, or society as a whole. Interest in the personal achievements of the heroes of an early age was merged in that of the larger groups surrounding them; this in turn developed into one centering about the impersonal institutions of a nation, and from the study of the institutions of one nation has come in its turn the comparative study of the institutions of different nations. The relation between the subject about which interest centers, and which becomes the subject of history, and the form that this history takes may be illustrated by the following simple classification:

Center of Interest.	Subject of History.	Form of History.
Single individuals,	Heroes,	Biography,
Groups of individuals,	Court life,	Annals,
People,	Nation,	History,
Peoples,	Society,	Comparative history.

It has been said that this may be illustrated by the development of the quadrant into the complete circle. With the completion of the circle, however, and the development within it of the history of special subjects, history broke down of its own weight. It was no longer possible to write "universal history," in the sense of writing a history at first hand of all the nations of the world in all their individual activities, and therefore special histories were written. Thus, at the very moment that the circle was complete, the process of disintegration began. Histories came to be called "political histories," "constitutional histories," or "histories of the people." Literature and art, religion and philosophy, science and mathematics, developed their own histories. Political science, economics, international law, all grew up as special subjects within a domain that had previously been called history. If this disintegrating process were to be continued indefinitely and history were thus to be resolved into its original elements, it must follow that when the process was complete history would disappear, and its place would be taken by histories of all the component parts of society. It is perhaps this result that Mr. Herbert Spencer sees when he says, "The only history that is of practical value is what may be called Descriptive Sociology," and that leads others to deny the existence, or at least the importance of history. Some have indeed seen the foreshadowing of this disappearance of history in the rapid rise of histories of the people, histories of the government of people, and other variants from the standard titles.

But while it is true that the point of view of the historian has changed during the process of evolution, and that now one thing and now another has seemed of paramount interest to him, it by no means follows that history has disappeared in the process. The principle of division of labor has been introduced, but division of the task does not annihilate the task itself.

The relation that history sustains to all the various subjects that have formed a part of itself may be illustrated by the comparison of history to the individual man made up of body, mind, and soul. The following simple classification will indicate how this comparison may be made :

Man	Material—Body	Bones . . .	Government .	Political science
		Organs . . .	Production .	Economics
		Arteries . .	Commerce . .	Economics
		Muscles . .	Manual labor .	Economics
		Nerves . . .	Communication	Economics
		Flesh . . .	Masses . . .	Sociology
		Brain . . .	Professions . .	Literature
		Form and color	Art . . . . .	Æsthetics
	Immaterial . .	Mind . . . . .		{ Psychology
				{ Philosophy
		Soul . . . . .		{ Ethics
				{ Religion

From this classification and comparison it is evident that a study of politics gives the history of the social anatomy, that the study of economics is concerned with the material side of life, that the history of the masses of the people tends to lack form and substance, and the history of form and color emphasizes sentiment rather than strength. Histories of the people were an inevitable reaction from the chronicles of court gossip, but they were themselves open to the same criticism of being only special histories. Histories of art and of literature were inevitable, but they have never been substitutes for history proper. "Politics is the superficial struggle of human ambitions crossed occasionally, but rarely, by a sincere desire to do good. History must take account of politics, as of everything else, but let it remember that politics is in its very nature bold and encroaching, a part of that fierce struggle for power which is so unlovely."<sup>2</sup>

History is not and can never be supplanted by one of the subjects that form part of it. Every organ of the body has its individual organism—the heart has its valves, the lungs their veins, the stomach its muscles—but the study of these does not supplant the study of the organism as a whole. A study of general physiology and anatomy is necessary before one can become a specialist, and the specialist must constantly revert to the general practitioner if he is to keep in mind the relation his own work sustains to that of his fellow specialists. In a similar way it is true that the historian of literature cannot understand his subject without a knowledge of the general historical forces that are behind it and that are working in connection with it. The economist

<sup>2</sup> EDWARD EGGLESTON, *Annual Report of the American Historical Association*, 1900, Vol. I, p. 40.

must reckon with politics; the political scientist with literature; æsthetics with psychology; and philosophy with religion. It has thus become the function of history, not to magnify heroes into demi-gods, not to chronicle the idle gossip of courtiers, not to exalt one country at the expense of another, not to content itself with detached and isolated subjects, not to undertake *de novo* the study of the development of the world from its beginning to the present moment, but rather to utilize the work in other departments of knowledge, to combine these into new wholes, to show relationships, to keep a true perspective, to weld into an organic whole the story of the activities of mankind. It must follow that it is futile to ask, "Which is more profitable, the study of the history of England or that of Italy?" England gives the best illustration of political development, but we must go to Italy for the study of art, and to Germany for the study of philosophy. It is equally futile to ask, "Which is more important, the history of inventions or that of military campaigns?" Inventions, military campaigns, politics, art, and literature all play a part in that complex organism called society, and history must take each into account in its portrayal of human development. The part is not equal to the whole, but the whole is equal to the sum of all the parts. The historian must build the structure while the archivist lays the foundation, the writer of monographs collects the material, and the specialist adds particular features. The historian, like the poet, sees that

"All nations have their message from on high.  
Each the messiah of some central thought,  
For the fulfillment and delight of Man.  
One has to teach that Labor is divine,  
Another Freedom; and another Mind;  
And all, that God is open-eyed and just,  
The happy center and calm heart of all."

#### IV.

##### THE RELATION OF HISTORY TO OTHER SUBJECTS.

History does not occupy an isolated place; it sustains an intimate relationship to every other branch of knowledge. Yet this relationship is by no means the same in every case since it is never either mechanical, arbitrary, or inorganic. What this is may be indicated by the classification of different subjects under the heads of the antecedents of



history, the "satellites" of history, the auxiliary subjects, the allies of history, and the offshoots or descendants of history.

The antecedents of history—geology and anthropology—give a necessary substratum of knowledge on which the historian must build. The historian is not and cannot be either a geologist or an anthropologist, and the time has long since passed when he could seriously be advised to become a master of either subject,<sup>2</sup> but the physical construction of any country is often a key to its history, and so history is indebted to the antecedent sciences for the basal facts on which its own story of the human past is developed.

The "satellites" of history, to borrow Mr. Freeman's term, though not his classification—chronology, statistics, numismatics, sphragistics, heraldry, geneology—have no inherent value, but derive their importance from their connection with history. "They are studies whose results are most precious to the historian, but which, in themselves, apart from their use to the historian, seem not to rise above that kind of curious interest which may be called forth by an inquiry to which a man gives his mind."<sup>3</sup> History relies on the information gained through chronology, statistics, and kindred subjects for exactness, for accuracy, for elucidation of obscure points, yet these subjects have in and of themselves no meaning apart from their connection with history. They derive their importance as branches of knowledge from the light that history throws on them.

The subjects auxiliary to history—archæology, epigraphy, paleography, heuristics, diplomatics, bibliography, philology, and all language studies<sup>3</sup>—are those that may be called the working tools of history. MM. Langlois and Seignobos have indeed pointed out<sup>4</sup> that there are no branches of knowledge that are auxiliary to historical research in general, or that are useful to all students irrespective of the particular part of history on which they are engaged, but the relation that archæology and epigraphy sustain to classical history is the same

<sup>2</sup> "The historian will clearly do his own regular work better for being master of of them (geology and associated sciences)."—FREEMAN, *Methods*, p. 45.

<sup>3</sup> *Ibid.*, p. 49.

<sup>4</sup> *Introduction*, pp. 52-53.

<sup>3</sup> Bernheim makes a different classification, including in "Hilfswissenschaften" subjects like numismatics that have been classed above among the satellites of history, but it seems necessary to distinguish between those subjects that in and of themselves have a distinct place as helpers in the study of history and those whose chief or only interest depends upon their connection with history.

as that sustained to mediæval history by paleography and to modern history by the modern languages—it is impossible to understand, to write, to teach history without the help given by one or more of these subjects.

The allies of history—geography, memoirs, biography, literature, art, law—are subjects that have an independent value of their own apart from that derived in the study of history, but subjects that depend for their elucidation quite as much on history as does history on them. History depends on the information contained in memoirs and biographies, but memoirs and biographies are in turn indebted to history for their setting and often for their interpretation. Much of the information in regard to the past has been stored up in literature, but literature cannot be understood without a comprehension of the historical forces that produced it. Art is the interpreter of history as history is the interpreter of art. It is impossible to determine whether law owes more to history or history to law. History is but imperfectly understood without a knowledge of geography, and the converse is equally true.

Finally, there are the offshoots or the descendants of history, as political science, international law, economics, finance, and kindred branches that in the widening of the field of history have been separated from it.

History thus does not occupy an isolated position and the historian, like the dwellers in Arden,

Finds tongues in trees, books in the running brooks,  
Sermons in stones and good in everything.

If history is thus connected with every other branch of knowledge through the organic relationship that unifies all knowledge—an idea of interdependence emphasized certainly as far back as time of Cicero<sup>1</sup>—if the writer of history must never lose sight of that unity in historical development so insisted upon by Mr. Freeman,<sup>2</sup> it must follow that the teacher of history must in his own work take cognizance of this interdependence of subjects, and must maintain in his teaching the same unity that the historian must preserve in the writing of history.

<sup>1</sup>“In truth, all the arts which concern the civilizing and humanizing of men, have some link which binds them together, and are, as it were, connected by some relationship to one another.”—*Poet Archias*.

<sup>2</sup>“The Unity of History,” in *Comparative Politics*, and “Inaugural Lecture” in *Methods of Historical Study*.

This does not mean that the teacher of history is to teach all facts lest some of the essential ones escape. One who attempts that plan may well be reminded of the words of John Morley, when he recalls how "the Greek poetess Corinna said to the youthful Pindar, when he had interwoven all the gods and goddesses in the Theban mythology into a single hymn, that we should sow with the hand and not with the sack. Corinna's monition to the singer is proper to the interpreter of historical truth: he should cull with the hand and not sweep in with the scythe."<sup>1</sup> It does not mean that the effort must be made to have the child live over again the experiences of the race. It does not mean that either the one teaching or the one taught is to become master of all the sciences in the curriculum. It does mean that in every way possible history is to be illustrated by every other subject in the curriculum and in its turn is to illustrate them.

How this is to be done it is equally impossible, inadvisable, and unnecessary to state at this time, except briefly through two illustrations drawn from the study of numismatics, and of geography.<sup>2</sup>

The historian has come to recognize the important part that coins play in the illustration and confirmation of history, and that "a minute knowledge of history is at once demanded for and produced by the study of Greek coins."<sup>3</sup> The teacher of history in using the study of coins to illustrate his own work has at his disposal the various authoritative works on numismatics with their accompanying plates, collections of coins in museums, photographs of coins, the series of postal cards illustrating ancient Greek coins, and, best of all, the interest in collecting coins which with the boy is second only to that of collecting postage stamps. It is possible for the teacher, armed with these resources, to show how coins illustrate the development of Greek politics from the early period of the independence of the Greek cities when each city has its own separate coinage,<sup>4</sup> through the period of political alliances when separate coinage was abandoned in favor of that of the alliance<sup>5</sup>

<sup>1</sup> *Critical Miscellanies*, I, 2-3.

<sup>3</sup> PERCY GARDNER, *Greek Coins*, p. 62.

<sup>2</sup> Numismatics is selected as illustrating the group called "satellites" of history, and geography that of the allies of history.

<sup>4</sup> MIONNET notes 1,500 towns that had their own coinage, and scores of others were added after the work was published (1807-37). Coins are extant of more than 750 Greek cities in Sicily, while at least fifteen cities in Acarnania alone had separate coinage. *Ibid.*, pp. 26, 27.

<sup>5</sup> MR. PERCY GARDNER clearly show how it was no light thing for the cities to give up the types and monetary standards they had had and to adopt those of a

to that of the unification of Greece under Alexander and the consequent adoption of a universal Alexandrine coinage. In American history the phrase, "I don't care a continental," still perpetuates the memory of the financial impotence of the Continental Congress.

The military coinage adopted at various times gives important evidence concerning the conduct of military campaigns. The earliest Carthaginian coins were those struck in Sicily to pay the mercenary troops in the invasion of 410 B. C.<sup>2</sup> There was an Anglo-Gallic coinage of the time of the Hundred Years' War, while the Black Prince had coins with detached feathers on the field, commemorating his depluming the helmet of the King of Bohemia.<sup>2</sup> The reign of Charles I. can be exhibited graphically by means of coins. During the time of the Civil War rude pieces were struck off in haste without the necessary coining apparatus, and these are often the monuments of disaster or of triumph; in Oxford silver twenty-shilling pieces were coined from the plate given by the heads of colleges to be melted and coined by the Royalists.<sup>3</sup>

If political and military conditions can be thus strikingly illustrated by means of coins, it must be self-evident that the financial condition can be thus shown. The current expressions, "I don't care a sou—a rap—a soldo," illustrate the minute subdivisions of the monetary unit in the countries where heavy taxation goes hand in hand with poverty of resource. The absence of these small subdivisions and the scarcity of even the smallest of the subdivisions coined, as of cents in California, must indicate the opposite condition.

These few illustrations drawn from numismatics have been suggested to show the use that it is possible to make of that subject in illustrating history. It is impossible for the immature student to reconstruct history through a study of coins, but it is possible for the mature teacher to avail himself of the researches of the trained historical investigator, and thus to elucidate and to vivify to a class many important events in history otherwise difficult of comprehension.

The subject of geography presents many difficulties not only because of its vastness, but also through the indefiniteness of its limits.

league. Coins are extant showing the monetary alliances existing among the cities of the Chalcidian league, of the Archæan league, of the Atolian league, among the cities of southern Italy, in Asia Minor, and among the cities of the Asiatic coast.—*Greek Coins*, pp. 27-31.

<sup>2</sup>HILL, *Greek and Roman Coins*, p. 97. <sup>2</sup>HUMPHREYS, II, 440. <sup>3</sup>HUMPHREYS, I, 5.

The great branches of physical, political, and commercial geography are each sufficiently comprehensive to be considered a subject by itself, yet each is so interwoven with the other that it is impossible to make any division between them. "History is not intelligible without geography,"\* and this statement from one of the best authorities on the relation between the two subjects must be accepted as covering all the different phases of geography.

The dependence of history upon the physical character of a country is evident when it is seen to what extent these conditions have determined those on which history is based. The beginnings of nations have been influenced by the existence of broad fertile valleys, while very high or very broad mountain chains have, outside of America, decided national frontiers. The necessity for individual protection determined the sites of the hill fortress-towns of ancient Greece and of mediæval Italy, as protection again has led to the choice of sites partly encircled by water, as Durham, Venice, Bern and Constantinople; the necessity for national defense has developed the great modern fortress-towns of Grenoble and Belfort; commercial reasons have placed towns at the junction of two rivers, as Mainz, Coblenz, and Lyons, or near the mouths of rivers, as Philadelphia, New Orleans, and Havre.<sup>2</sup> Trade routes, military operations, terms of treaties have all been conditioned by geographical features.

Geographical nomenclature is in its turn a fruitful field for showing the relation of history and of geography, as is evident in the term "fossil history" that has been applied to it. Great erudition has been required to determine satisfactorily and conclusively the origin of large numbers of European geographical terms, but the problem in America is simpler than it has been in Europe and it is far simpler here today than it will be in the future. It is possible almost to reconstruct the early external history of America through the study of names. The Spaniards have left the traces of their explorations and discoveries in the names of saints and in names significant of the natural features of the country, and these are found all along the seacoast and the water courses of the southwest. The French discoverers in their turn have left along the great lakes and through the valleys of the St. Lawrence and the Mississippi the names of French explorers, occasion-

\* H. B. GEORGE, *History and Geography*, p. 1.

<sup>2</sup> Mr. George has given an entire chapter to the location of towns and I am indebted to him for the illustration of Belfort.

ally of saints, more often those indicative of the physical conditions of the country. The English settlers introduced a new element in nomenclature that had been impossible for the Spanish and the French in view of the great extent of territory explored and consequent lack of permanence, and that was names showing the affection of the settlers for their native English towns—hence the duplication all along the Atlantic coast of the geographical names of England.<sup>1</sup>

After the separation of the colonies from England, dawning Americanism is seen in the names Columbus, Washington, Hamilton, Jefferson, and those of other statesmen and leaders. Later, the same spirit developed Websters, Clays, Grants, and Garfields. American history is thus stratified in its geographical names. The love of native home that led to the conferring of so many names of England on the Atlantic settlements was reproduced when the descendants of these settlers became in turn emigrants to the western country.<sup>2</sup> Adventurers have left their footprints in Fair Chance, Eureka and Oka (softened from O. K.). "Boomers" have left their impression on Paris, London, Mason City, Charles City, and Metropolis City. The hopes and aspirations of the comers are seen in Concord, Liberty, New Era, and Unionville. Vaulting ambition has sprinkled over central New York most of the classical names of Greece and ancient Italy while Sparta appears in Wisconsin and Hannibal in Missouri. A score of additional classifications of American names might be made all showing how history has left its impress on American geography.

If we turn again to Europe, we see how the development in methods of warfare has changed the entire system of the defense of towns. The mediæval city walls, encircling narrow crowded streets whose buildings were prophetic of the tall apartment houses of today, have given place to broad boulevards that are indicative of peace. Evolution in the site of towns has produced successively the Grecian acropolis, the Italian hill castle, the English manufacturing town and the American railroad center.

<sup>1</sup>It is interesting, however, to note that this apparently did not come until after the period reflecting court influence, as is seen in the names Virginia, Maryland, New Jersey. When the actual settlers grew in independence, they gave the names of their home towns.

<sup>2</sup>Jersey Shore, Pa., Salina, Kansas,—the frequent repetition of names like Oswego, Brooklyn, Rochester, all show the influence of inter-state migration, as Penn Yan and Beloit show the results of compromise between settlers from different sections or holding different views.

These are but suggestions of the innumerable ways in which history and geography each supplement and explain the other. The immediate relations between the two subjects are more obvious than is the case with numismatics and history, yet in this very apparent simplicity of relationship there lurks a danger. About no class of facts and conditions is it so easy to generalize from insufficient data as about those relating to geography.\* The novice who would hesitate to formulate conclusions in regard to the connection between archæology and history, or heraldry and history, does not hesitate to draw sweeping deductions concerning the apparent mutual influence of geography and history. The teacher must be well equipped with a fund of geographical and historical knowledge, rather than familiar only with technical method, if he is to hold in check this too common tendency.

The philosopher has shown the unity of knowledge, the historian has proved the unity of history, the teacher must teach the unity of history and other subjects in the curriculum.

## V.

### OBJECT OF THE STUDY OF HISTORY.

The question is often asked, What is the object of history? The very ambiguity in the form of the question is a true reflection of the ambiguity in the mind of the questioner in regard to the nature and function of the subject. To accept, however, for the present the question in its vague form, the necessity must be clearly seen of differentiating at the outset the reading of history from the study of history, and the study of history from the writing of history. It is one thing to write history, it is quite another to read history, and still another to study history. Thus the object of the writer of history, of the reader of history, and of the student of history are all diverse and must not be confused.

To the question, What is the object of the historian in writing history? the reply may be made in the words of one who is himself a

\* One illustration of this is the frequent insistence on the idea that the sea and the mountains are the natural homes of liberty,—a statement repeatedly met with in the older text-books on history. Mr. George advances the ingenious theory that the statement owes its vitality to Wordsworth's sonnet. P. 74.

distinguished historian, "It is not patriotism, nor religion, nor art, but the attainment of truth that is and must be the historian's single aim."<sup>2</sup>

To the question, What is the object of reading history? an answer may be given in the words of Mr. Percy Gardner: "One of the greatest benefits bestowed by the muse of history on her votaries is that she lifts them out of the ordinary dull routine of a monotonous life, and conveys them through bygone scenes and to distant countries; that she enlarges their ideas through the contemplation of states of civilization different from the present; that she widens their charity by laying out before them a vast panorama of forgotten beliefs and endeavours; that she softens their hearts with emotions of pity and admiration for persons who have lived and died; that she helps them to the goal of right action by mapping out the course whereby others have attained that goal."<sup>2</sup>

To the question, What is the object of the study of history? no categorical reply can be given. The object varies according to the varying stages of mental development. The object to be gained by the study of history is one thing with the child, it is something quite different with the high-school boy, and again different with the college student or mature scholar. At every stage of the educational process, the object varies since it must adapt itself to the mental development of the child or student.

Moreover, it must be borne in mind that history, like many other subjects, is in the curriculum for a double object—for the direct information that it gives and for its help in mental training. These two purposes are often confused, and varying reasons are assigned by as many varying persons to whom one side of the question may seem all-important. To one history is of help in political discussion, to another it affords subjects for polite conversation, to another it is studied to promote patriotism; one values it for its moral lessons, another for its opportunity of character study, and a third, for examples to be followed when similar conditions arise; one studies it because it is interesting, another prefers fact to fiction, while another finds it helpful in studying literature and art; one considers it useful in training the memory another in training the judgment, and another in arousing interest, and a fourth in unifying the curriculum.

This confusion of the purpose to be served by the acquisition of historical knowledge and of the disciplinary end to be served in the

<sup>1</sup> F. YORK POWELL in *Langlois and Seignobos*, p. xi.

<sup>2</sup> *New Chapters*, p. 23.



study of history is well illustrated by the history of history in the curriculum. Even the most cursory examination of this history will show the different ends that it has served at different times. At first Greek and Roman history was taught in college as an adjunct of the classics and hence the subject had an entirely subsidiary position. At the same time American history was taught in the ungraded schools and in the grammar grades of the graded schools, largely as a result of the belief that "everyone ought to know something about his own country." The object here was apparently to foster patriotism and particularly to magnify the deeds of the Colonists in the war of the Revolution. In seminaries and academies outlines of the world's history were taught, presumably to provide subjects for conversation. The field of history to be studied varied, not according to the mental development of the pupils of a school, but according to the nature of the school. The classical school taught classical history, the public school taught United States history, the boarding school taught so-called universal history.\* History has now been accorded a more prominent and important place in the curriculum. This has resulted in part from the rapid development of both the school and the college curriculum and the consequent introduction of many new subjects, in part from the study of European systems of education, where history occupies an important position; in part from the rapid accession of citizens of foreign birth and the belief that their children should acquire at an early age a knowledge of the history and institutions of their adopted country.

But the confusion still remains between history considered objectively and subjectively. If the object of the writer of history must be differentiated from that of the reader of history, it is equally necessary to differentiate the use to be made of historical knowledge, or the subject-matter of history, from history as a study to be made use of in the curriculum as a means of mental education.

It is foreign to the purpose of this paper to discuss the uses of historical knowledge—they are as widely divergent as are the necessities of the individuals appealing to a knowledge of the past for personal or public, private or official reasons. But it is the function of a body of men discussing the scientific aspects of education to ask, "How can history be used in the curriculum as a means of mental education?"

\*For a history of the teaching of history in this country, see H. B. ADAMS, *The Study of History*.

To answer the question, it is necessary to ask another—"What are the mental states and processes of the child, the boy, the young man, that must be kept in mind if history is successfully to be made a part of the curriculum?"

The first stage of mental development is the one usually called the imaginative period. It is at least a question whether this period has been correctly named—the world in which the child lives is to himself a very real one and is an imaginative one only from the standpoint of the mature person. But the term is here used in the usually accepted sense. The child, from his own point of view, lives in a real world—from the point of view of others, it is a world of the imagination.

The stage that follows that of the imagination is the one controlled by enthusiasms; it is the period of dreaming dreams and seeing visions, the time of ideals and of widening horizons. The unreal world of the imagination in which the child has lived has developed into a very real one with constantly widening boundaries. He is reaching out into the future, questioning his own relation to his environment, to his unknown future, and to his equally unknown past. His interest in the story of the past is a twofold one—in it he finds conditions and situations that may explain his own, and in it he finds ideals that may guide him in the future. But he is no longer satisfied as when a child with single, detached events and isolated characters. His heroes must also be men of ideals as well as deeds, they must have a large theater for their action, they must sustain a definite relationship to the world in which they lived and be leaders in it. His imagination is fired by the history of their deeds, and his zeal is quickened to imitate them. Honor, courage, enthusiasm on the part of the great men of the past find a responsive chord in the boy.

The third period that follows that of enthusiasms and the earlier one of the imagination may be called that of unification or integration. Imagination and enthusiasms have by no means passed away—rather they remain as the basis on which integration is developed. But the desire for unity, for relationships is developed, and with the accumulation of a multitude of facts comes the desire to find unity among them, to seek for guiding principles, for magnets which shall gather the isolated, unrelated facts about a common center.

The fourth period again gathers into itself the characteristics of the previous periods, but it is now the judgment that becomes the prevailing one. The young man is no longer satisfied with the surface

presentation of the events of the past, but he makes comparisons, finds analogies, seeks for the relations of cause and effect. The critical faculty holds in check the earlier enthusiasms, and the events of the past now appeal not so much to his enthusiasm as to his reason and judgment.

The fifth period is not always, perhaps even is seldom, reached by the student during his nominal school life. Indeed it may happen that it is never reached at all by those whose training has been incomplete or abortive. It is the period when the creative spirit is roused and the individual is no longer satisfied with accumulation, but is impelled by forces from within once more to reconstruct some part of the story of the past. He searches for new material, he combines accepted facts into new shapes, he finds himself one in the brotherhood of creators and producers.

What then is the object of the study of history on its educational side? The answer must be that it is to provide material that may aid in developing the faculties dominant at each stage of mental development. A corollary must follow. The material selected and the use made of the material must be adapted to the mental condition of the individual who is to be educated. To force the reconstruction of the past by one who has not yet reached the creative stage is to clothe the child in the garments of the man. To give the mature student a kaleidoscopic picture of the past as a substitute for an orderly sequence of events, the interpretation of which demands the exercise of reason and judgment, is to clothe the man in the garments of the child.

This is a general statement of the problem and its answers. To state the question in detail, the object of the study of history on its educational side is first to train the imagination, to use the phrase in its commonly accepted meaning, during the period that corresponds roughly to the primary grade; it is second, to cultivate enthusiasms during the period that corresponds to the grammar grade; it is third, to secure integration of facts and ideas during the high-school period; it is fourth, to train the judgment during the college course; it is fifth, to foster and minister to the creative spirit during the university and subsequent periods. Thus the object on its educational side varies with the age of the boy or young man, and at each stage it adapts itself to the mental equipment found. Imagination never disappears, but it is controlled and regulated, and during the creative period is of the greatest assistance in vivifying the past. The creative

spirit is in embryo form during the period when the imagination holds sway, but it develops with each stage until it becomes the ruling characteristic.

The object may be stated in still more concrete form. It is first to people the world in which the child lives with simple, concrete characters that have to the mind of the child neither time nor place relation. The individual has come within the horizon and interest centers in him. He has no knowledge of the state as an organism, no conception of the institution of the church, no comprehension of abstractions, but what is human and personal appeals to him. His imagination is vivid, but it cannot create, and therefore it can deal only with that of which it has already conceived. It is the human and the personal that appeals to him, and that which is without time relation that attracts. Achilles and Romulus, Odin and Alfred, Charlemagne and Napoleon, Washington and Standish are all fellow countrymen and contemporaries in that large world whose boundaries loom dimly before the vision of the child. The voyage of the Argonauts and the labors of Hercules, the founding of Rome and Horatius at the Bridge, the journey of Hiawatha and the search for an El Dorado are all real events in the shadowy world in which the child lives.

The object in the second stage of historical instruction is to give a time and place relation to these and similar characters and events, to minister to the enthusiasms of the boy by showing each in his true environment, to give him ideals by showing him what has been achieved, to help him reach out after the great world in which achievement and action have played a conspicuous part, to encourage the accumulation of large stores of information in regard to these heroes.

The object in the third period is to give unifying principles and thus it corresponds to the work of the artist in "composing" a picture.<sup>2</sup> It is to enable the boy to see not only unity in historical development but unity in all that he has to deal with—that mathematics and music are first cousins, that art and philosophy are related, and that the study of Sanskrit roots has made the world akin. Imagination and enthusiasm still have a place, but more emphasis must be

<sup>2</sup>"The law of help is the fundamental law of composition because it is the law of organic relationship throughout the universe."—CHARLES H. MOORE, *Atlantic Monthly*, October, 1900.

Composition is "the help of everything in the picture by everything else."—JOHN RUSKIN, *Modern Painters*, p. 174.

put on the arrangement, classification, and relationship of facts. Xenophon in describing the approach of the hostile army says: "It was now the middle of the day and no enemy was yet to be seen; but in the afternoon there appeared a dust like a white cloud, which not long after spread itself like a darkness over the plain. When they drew nearer the brazen armor flashed and their ranks appeared."<sup>1</sup> Then the historian narrates how one by one the different divisions of the army came distinctly into view. Thus the mass of facts accumulated in the first years of the child's study take form and shape, and at the close of the boy's high-school course he should have, as the result of the work of accumulating, classifying, and seeing the relationship of facts, a clear and definite impression of the progress of historical events, not only in his own country, but more especially in the larger world of which his native land forms but a part. Still more, he should have had an introduction to the idea that knowledge is singular in fact as well as in form. He must see not only the relationships between the different parts of the story of the past, but he must have an appreciation of the relationship between history and literature, both classic and modern, of the community of aim between work in history and work in geography, and that politics and history are but different faces of the same shield. He must realize that every study in the school curriculum dovetails into every other study making from seemingly isolated parts a compact, organic whole.

The fourth period has for its object training in the selection and use of material, in the collation of the material gathered, and in the correct interpretation of it. This period in its turn holds in solution the characteristics of those that have preceded it—"the years that bring the philosophic mind will not bring, they must find, enthusiasm," says Birrell, but the critical attitude of mind is asserting itself, "how" and "why" are the insistent questions, reason and judgment have gained supremacy. "The faculty to be trained is the judgment," says Bishop Stubbs in his inaugural address as regius professor of modern history at Oxford University. "What we want to see is men applying to history and politics the same spirit in which wise men act in their discipline of themselves."<sup>2</sup> After seventeen years of experience in the professional chair he again repeats, "I still think that the aim of historical teaching is the training of the judgment to be exercised in the moral, social, and political work of life."<sup>3</sup> It must follow that the

<sup>1</sup> *Anabasis*, I, 8.

<sup>2</sup> *Lectures*, pp. 17, 20.

<sup>3</sup> *Ibid.*, p. 373.

young man is no longer contented with chronicles of past adventures and of court life, but his reason demands food, the larger problems of society and of institutions absorb his interests, and college courses must satisfy these interests.

In the fifth period the student enters into his inheritance and joins the goodly company of those who through investigation and production are attempting to advance the boundaries of knowledge. The creative power is the last faculty of the mind to be developed, indeed it sometimes lies dormant throughout life, but the germs of that desire "to make something" that are so evident in the child in his relation to material things manifest themselves very early in an intellectual way. The boy produces nothing of intrinsic value, as the child with a few tools and unskilled in their use produces nothing valuable in a material way, but in both cases there must be the same attempts, although both may be equally futile. This creative spirit is, however, largely held in check during the years when the boy, with insatiable desire for stories of adventure, with a capacity for hero worship that demands objects for admiration, with a groping after an intellectual protoplasm that shall give life to dead facts, with developing judgment that carefully balances the pros and cons of every question—has been traversing the road from primary school to university. But with the entrance on a university career the young man breaks aloof from past leaders and tries his own strength. The creative spirit has the mastery and by its exercise the sum total of human knowledge is enlarged.

What then is the object of the study of history? It is to train the mind through a recognition on the part of the teachers of history of the various stages of mental development, of the characteristic features of each development and of the necessity of adapting the material used to those varying developments. The starting point is the child with the same mental endowment he has in later life; the objective point is the mature student fully equipped for mature research, original investigation, and philosophical conclusions. In the child and in the mature student the power of accumulation and the creative power are in inverse relation to each other. In the child the power of accumulation is strongest, the creative power weakest; he stores up the material collected for him, but he adds nothing to the sum total of historical knowledge. The mature student has not lost the desire for the acquisition of facts, for facts must be the foundation on which he builds, but by the discovery of new sources and by new combinations of well-

known facts he no longer merely absorbs what has been collected, but he makes a permanent contribution to historical science.

It must follow that the teacher of history, whether the teacher in an elementary school or a university professor must take into account the mental equipment of those with whom he deals, and adapt his material and the methods of handling it to the conditions found.

## VI.

### SELECTION OF MATERIAL.

The attempt has been made to show that the objective point in the teaching of history varies according to the mental development of the pupil. It must follow that the principles adopted in the selection of material must conform to the same general plan. "Advanced work in history does not consist in studying larger books and more of them"; there must be a progressive development in the selection of material, and this selection must be made with reference to the mental condition of the one who uses it.

If this is conceded, the first question is, What should be the introduction of the child to the unknown past?

It has been found that the child lives in a world where the imagination holds sway—a very real world to him, but one peopled with fairies and hobgoblins, without time or place relations, where he lives somewhat apart from the everyday life by which he is surrounded. His mind craves stories, and stories of events having the characteristics of the unreal world in which he himself lives. It is thus the universal myths that appeal to him—the voyage of the Argonauts, the labors of Hercules, the siege of Troy, the wanderings of Ulysses, the founding of Rome, the journeys of Æneas, Arthur and the knights of the Round Table, Odin and the heroes of the North, and the story of Hiawatha—in all of these universal myths he finds friends and familiar scenes. The world of story is the world of his own dreams, and he is here at home with companions amid friendly scenes. While his introduction to the past must be through the suggestion of interests lying outside of himself, it must yet be through those diverging not too widely from them. That which is remote appeals most strongly to the imagination of the child; types rather than species arouse his interest. It is therefore the superhuman that at first appeals to him. It was no

without a deep basis of truth that the Greeks represented their heroes as of superhuman size. The converse of the same idea was afterward embodied in the saying, "A prophet is not without honor save in his own country," and again, in the more modern form, "No man is a hero to his valet." Rosenkranz rightly says that the best literature for children, from their seventh to their fourteenth year, "consists always of that which is honored by nations and the world at large." It was with this thought that Fénelon wrote his *Dialogues of the Dead*, and that Rousseau urged that the child's first book should be *Robinson Crusoe*. Thus Homer and Virgil, *Don Quixote* and *Gulliver*, *Robinson Crusoe*, and the *Arabian Nights* never grow old since they are the reproductions of the types universally recognized.

The material to be selected therefore for the first work in history during the period when the child's imagination is his predominant mental characteristic, or, to express it more truly, while the child is still in an experimental period, is from the realm of mythology rather than from history proper. It must come from the borderland between history, mythology, and literature. It represents not the world of today, but that world known to the early races either definitely or through vague tradition. It is the mythology of Greece and Rome with that of the nations only dimly known to them. But fragmentary and vague as is the early mythology, it is possible through it to give a fairly complete survey of the world's traditions. The child is unconscious that through these mythological tales he has thus become acquainted, in an imperfect way it is true, but still acquainted, with the traditional heroes of the early period, but he has stored up legends in regard to the early nations that in time will have for him a concrete existence. He has been given in a simple way an outline of the world's mythology. The following circle will show one way in which these mythological tales may be selected with this end in view.

But the child soon passes from the world of myths to the world of realities, and he demands "true stories." These stories, however, must be stories of what has come within his mental horizon. Interest for him as yet centers in the individual—he has no comprehension of the abstract conception of state, society or church, but he demands stories of individuals, and primarily stories of heroes. It is, however, the physical side of life, as regards nature and man, that appeals to him. It is thus physical rather than moral heroism that attracts him. If he draws any conclusion from the stories he hears, it is that wrong



is redressed and right maintained by physical prowess rather than by moral qualities. The heroes that appeal to his imagination and his growing enthusiasm are at first again those that represent universal types, but they must be "real" heroes. Achilles and Hector, Jason and Romulus, Odin and Arthur yield the place of interest to Lycurgus and Miltiades, Hannibal and the Gracchi, Alaric and Charlemagne, Alfred and William, Washington and Franklin. Yet these at first

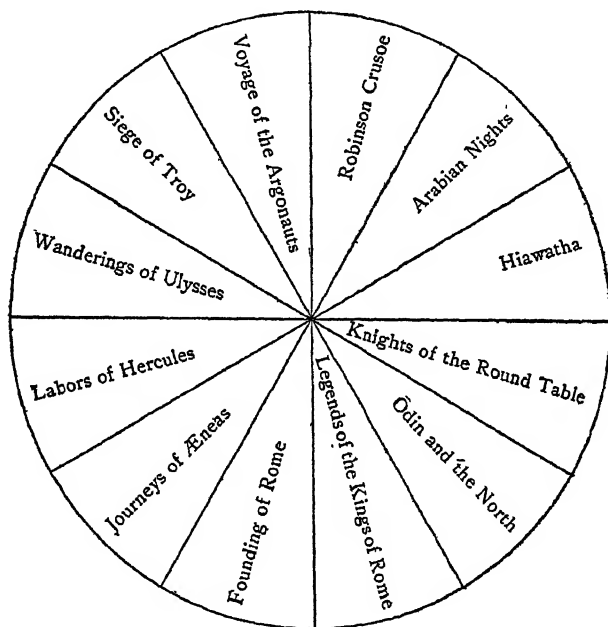


FIG. 1.—MYTHOLOGY.

again have for the boy neither time nor place relation. They are types that belong to every age and to every nation, and thus they are the heroes of every child. All these and other heroes might exchange age, locality, and nationality, and yet they would represent the same general characteristics as before and appeal to the same love of heroes and heroism. They are types that belong to every age and to every nation, and therefore they are the personal friends of every child. Whether the hero belongs to one country or another does not concern him—the whole world of heroes is his by right of

eminent domain. Here again, as in the mythological tales, the horizon is widened, and it is possible to present a complete survey of the world's history in the form of biographical stories since the boy is interested in the great deeds, not only of the men of his own land, but of other countries as well.

The result of this selection of material may be illustrated by the following circle:

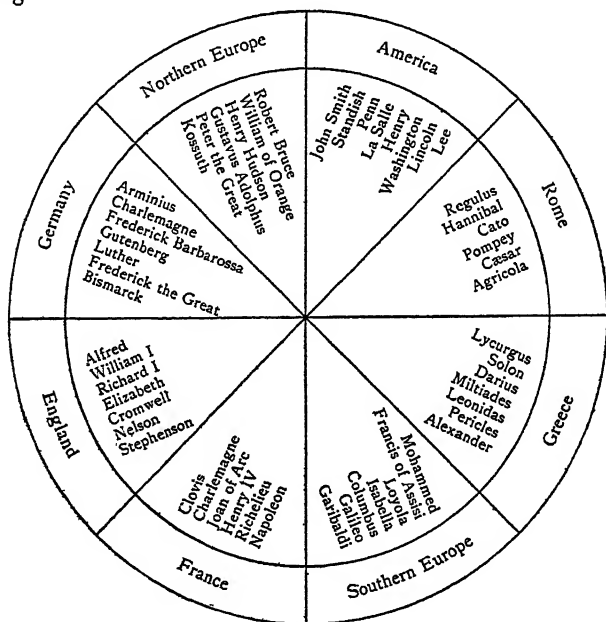


FIG. 2. BIOGRAPHY.

The first object is thus to minister to the imagination of the child and to awaken his dormant enthusiasm by placing before him individual characters representing general or national types. Through the selection of mythological and biographical material to accomplish this end, the boy has been given in an easy simple way a cross-cut section of the world's history. The circumference of his circle—a small one, but still a circle—is complete.

If the first principle to be followed in the selection of material is to make such a choice as will develop and train the imagination through the presentation of vivid pictures of the past, the second must be

to minister to the enthusiasm of the boy by providing a theater in which his heroes may play their parts—it is to present a general outline of historical events in which the lives of the individuals who have come within his knowledge may find their proper place. But in passing to the next larger circle the boy reassures himself in regard to what is familiar and goes from that by an easy transition to what is unknown. Thus the child who ascends a hill overlooking his native

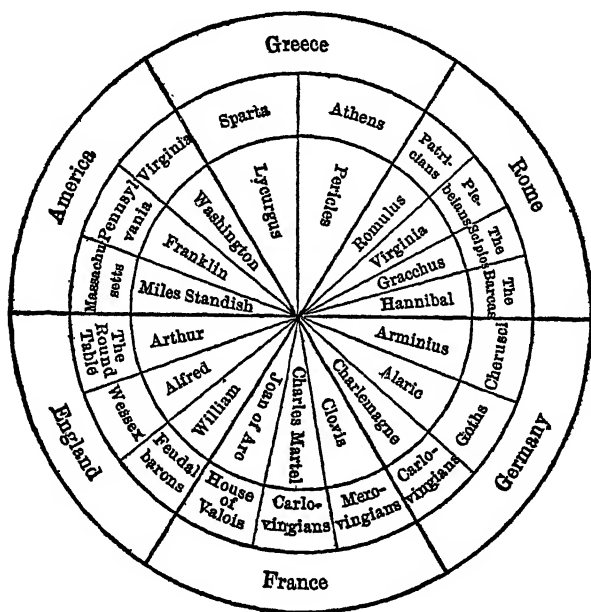


FIG. 3. FIRST CIRCLE OF HISTORY.

village asks first, "Where is our house? Where is grandfather's house?" When these familiar places have been found, he takes an interest in this broader aspect of the view. Enthusiasm is the dominant characteristic of the boy, but with all this enthusiasm he is seeking a setting for the fragmentary and incomplete picture given. His mind is groping for some unifying principle, for a complete whole to be constructed from and for the separate parts of history already known. The second step must therefore be to pass from the narrow circle of which the individual was the center to the larger one in which the

individual becomes the representative of interests broader than his own. Sometimes these broader interests represent families, sometimes cities, sometimes localities. Solon and Miltiades stand for Athens, Lycurgus and Leonidas for Sparta, Romulus is a patrician, Virginia a plebeian, and the Gracchi represent the powerful family of Scipios. Charlemagne is the founder of the Carolingians, William of Normandy a leader among the feudal barons. Columbus means Spain, and Captain John Smith is Virginia. This first general survey of history proper and the way it has been developed from the earlier circle of biography may be illustrated by circle on preceding page.

It is thus seen that the introduction to history comes through mythological tales and biographical stories that arouse the interest of the child, since the imagination is his controlling mental characteristic, and that through these he is given a picture of the past that includes within itself a fragmentary survey of the world's history. It has also been seen that enthusiasm is being roused and that in the second period this finds its proper field in the setting given the tales and the heroes of the first period through the outline given of the great events in the history of the world.

What then is the third step in the development of the boy's historical knowledge? It is to enlarge once more the circle and to place national interests above those of individuals or of cities and localities. The interests of Athens and Sparta are merged in those of the larger Greece represented by Demosthenes and Alexander. Pompey and Cæsar and Augustus are the representatives of a great power that controlled the world. Charlemagne is no longer merely a splendid chieftain, but he becomes the founder of a great empire. William of Normandy is not simply a feudal baron but he is the head of a great kingdom. Charles V. stands for the sovereignty exercised not only in Europe but claimed in the New World. Washington is a leader in the Revolution but far more than that—he is the founder of a new nation. Garibaldi is not alone a knight errant but he is an active agent in bringing about the great work of the unification of Italy. The circumference of the circle has again been enlarged and the boy has now a fairly well connected idea of the development of the world's history. This circle broadens until a fourth circumference has been reached. What this might naturally include is illustrated by the circle on opposite page.

But the desire for unity gives place in mental development to a

period when the mind seeks relationships, demands to know more of cause and effect, makes comparisons, and draws conclusions. As in each of the three previous periods of mental development, the object here is to provide material for the exercise of these characteristic qualities. Two complete surveys of the great events in the world's history have been made, indeed, three if the introductory circle of mythology and biography be considered one, a large amount of historical information

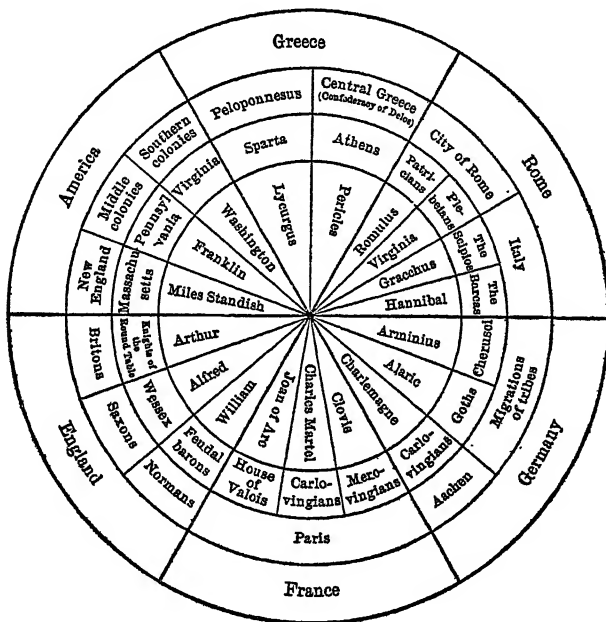


FIG. 4. SECOND CIRCLE OF HISTORY.

has been accumulated, and on this as a foundation special studies may well be made of limited periods where these relationships and comparisons may be more thoroughly studied. The judgment whose exercise has up to this time been largely held in suspense, now finds scope for its action and the college student, with a broad foundation of fact, with historical perspective, is in a position to make with interest, enthusiasm, and advantage a detailed study of these special periods that appeal to him.

The university student, who has become the trained investigator,

preempts his own field and reaps the reward of independent research.

The relations sustained between the mental characteristics of the boy, the object to be kept in view in training and developing these characteristics, and the material to be used in this development may be illustrated by the following table:

RELATION OF OBJECT AND MATERIAL.

AGE.	GRADE.	PREDOMINANT MENTAL TRAIT.	OBJECT.	MATERIAL.
6 7 8 9	Primary. I. II. III. IV.	Imagination.	To give vivid pictures.	Mythology, biography.
10 11 12 13	Grammar. V. VI. VII. VIII.	Enthusiasm.	To give ideals.	First circle of history.
14 15 16 17	High School. IX. X. XI. XII.	Integration.	To give unifying principles.	Second circle of history.
18 19 20 21	College. Freshman. Sophomore. Junior. Senior.	Judgment.	To study cause and effect.	Special periods.
22 +	University.	Creation.	To make some permanent contribution to historical knowledge.	Individual choice.

The principle at the basis of this arrangement of material and of its adaptation to the different grades of instruction is that of dividing the subject-matter of history into three or possibly four concentric circles. This division is based on the idea that the mental development of the child demands at different stages of its growth different

material with which to work, and that this material and this growth should be mutually related to each other. It involves going over practically the same ground several times, though in different ways. But this is of the same advantage to the pupil that it is to the instructor. The teacher gains new points of view with every repetition of a subject, and the pupil must do the same. Professor Henry S. Frieze, whose memory is cherished by all who came under his influence, once told his class reading Quintilian that it was the thirtieth time that he had read the author, but that he had found new beauties with each reading. The boy who takes history in "drei concentrische Kreise" is gaining breadth of view and maturity, the subject is ripening in his mind, he is assimilating it and making it a part of himself, he is seeing in it new beauties and gaining new inspiration from it. He is in a sense going over the same ground each time, but he is ascending a spiral from the apex of which he gains a wider vision than he could have in any other way.

The principle of arrangement of material by concentric circles has been as yet but imperfectly carried out in this country, but it has elsewhere proved a feasible and successful method, and it presents an ideal toward which it is possible to work.

## VII.

### THE TEACHING OF HISTORY.

A careful observer of the changes that have taken place in the manner of teaching history within the past twenty-five years is able to distinguish three stages through which it has passed, or indeed in some localities is apparently still passing. The characteristic feature of the early stage may be indicated by three illustrations. In one of our great universities less than twenty years ago the expression was current among the students that English history was divided into periods of thirteen pages each. It is on record that one of the professors of Harvard University states that his first class-room exercise in history was prefaced by the kindly remark of the instructor: "The fleet of the Lacedemonians was now equal to that of the Athenians; proceed, sir." In 1893 eighty-two schools in New Haven county, Conn., were asked in regard to history instruction: "Is the memoriter method used?" Thirty-seven schools answered "Yes," six answered "In part," while

a teacher in a neighboring county apologetically explained that "he was not particular about the words of the text if the pupil gave words as good." In 1883 Professor, now President, G. Stanley Hall, stated that he was convinced that no subject so widely taught was, on the whole, taught so poorly as was history,<sup>2</sup> and the truth of his statement was borne out by the illustrations given by others writing at the same time.<sup>3</sup>

During this earliest and longest stage the text-book was taught as infallible and the chief educational purpose served by the teaching of history was that of training the verbal memory.

It was inevitable that earnest students and teachers should seek relief from this mechanical, artificial conception of history, and it was equally inevitable that when the reaction came it should be a violent one and in obedience to the physical law that action is equal to reaction. It is, therefore, not strange to find that during the following period high-school pupils were studying the science of history, that source books supplemented text-books, libraries became laboratories, and teachers of history developed into historical Cuviers endowed with the power of reconstructing the story of the past from the fragments of a song and the scattered remnants of an antique vase. Since the text-book was cast aside, the training of the verbal memory gave place to the training of the judgment as an educational object, with the inevitable result that demands were made on the immature minds of boys and girls that could not be met, and what should have been an educational process became a hothouse, forcing process.

A third period in the teaching of history has apparently been entered on. It is one characterized by three controlling ideas—that the text-book is indispensable in the teaching of history when used as a servant and not as a master; that history cannot be reconstructed in the classroom through the use of the sources by immature students or even by expert teachers; that an intelligent, well-trained teacher with a knowledge of history, with an enthusiastic love for it, with the truly historic mind which Frederick Harrison says "is the mind of profound sympathy with the great deeds and passionate hopes of men in the Past,"

<sup>2</sup> *Methods of Teaching History*, p. vii.

<sup>3</sup> "I have heard of a person, by courtesy called a teacher, who habitually kept his finger upon a line in the text-book before him, and limited his instruction to the work of correcting the trifling variations of the pupil from the phraseology of the text."—C. K. ADAMS, *ibid.*, p. 177.



and with a clear idea of what he is attempting to accomplish through the instruction he gives—that such a teacher is infinitely more potent in achieving successful results than is any method, however admirable in itself, without the master hand behind it.

These changes that have been going on in the class room are but the reflections of the somewhat similar ones through which the writing of history has passed. The latter have been already indicated, and they show that in every period the teacher of history has followed, though at a somewhat slower pace, in the footsteps of the investigator and writer. Every change in the method of writing history and in the conception of what its objective point should be is accompanied or followed by a parallel and corresponding change in the methods of teaching it. Every step in advance made by one necessitates a similar change on the part of the other. The historian who slavishly followed the printed record without inquiring into its credibility and used it to write a history glorifying his own political and military heroes and correspondingly villifying his enemies, has his counterpart in the teacher who follows the text with his finger while conducting a recitation. The historian who throws aside the printed record and reconstructs a history exclusively from folk-songs, from architectural remains, from coins, statuary, and heraldic emblems, finds his counterpart in the professor who a few years since proclaimed in the annual catalogue of a large and important university that no text-book in history was used, but that one was being prepared by the professor and advanced students in the historical laboratory of the university. The historian who intelligently and critically makes use of every source of information at his command and then tells the truth as he sees it, is the forerunner of the intelligent teacher who bases his work on a good text-book and supplements it by constant use of illustrative material drawn from literary and monumental sources.

It may thus be said that the writing of history and the teaching of history have experienced similar changes as regards the object in view and the method of attaining it, that with both the first stage of experience may be described as one where the centripetal force of printed record and of text-book kept historian and teacher in subjection; that during the second stage the centrifugal force of historical skepticism and of educational protest tended to drive both historian and teacher to the opposite extreme: that during the third period the approximate balancing of the two opposing tendencies has enabled both historian

and teacher to approach more nearly the perfect circle where criticism does not mean skepticism and where text-book and source find their proper equilibrium.

So much progress has indeed been made in the teaching of history that it may perhaps be felt that the battle for effective, successful work has already been won. But partial success means only the necessity of still more careful inquiry into the reasons why success has been partial rather than complete. It is thus necessary to ask, What are the defects frequently found in the present condition of history-teaching?

A most serious one is often the lack of a knowledge of history on the part of those expected to teach it. That a teacher should have some acquaintance with the subject he is to teach would seem to be axiomatic, yet the numberless cases on record where presumably this is not the case shows that this fundamental principle has not as yet been accepted either by the employers of teachers or by the teachers themselves.<sup>1</sup>

A companion defect is the belief that some special method can be devised that will serve as a northwest passage to success in teaching history. This idea is fostered by nearly all the text-books of history in the market. Sometimes these are accompanied by manuals of instruction in the use of the text-book; often they contain chapters entitled "Suggestions to Teachers;" in several every chapter is followed by a list of questions to be used by the teacher and by lists of topics for special reports; others give minute instructions to the teachers concerning the preparation by a class of digests, abstracts, fluents, perspectives, and note-books; still others are accompanied by marginal outlines, numbered paragraphs, headings in heavy type, and a bewilderment of paraphernalia for substituting the knowledge of history possessed by the author for a knowledge presumably desired but obviously not enjoyed by the teacher. One text-book goes so far as to say that its distinguishing characteristic "is its capability of helping even the untrained teacher to do work according to the best methods." It must be evident that all so-called "suggestions to teachers" are but crutches by which incompetent teachers are enabled to hobble along

<sup>1</sup>The one class in history in a large school is taught by the teacher of gymnastics. In another important school the single class in history is assigned to a science teacher. In a high school having 1500 pupils the college preparatory history is in charge of a teacher whose entire preparation for it as regards work in history was one three-hour course running through a year. The above list can be added to indefinitely.

and the use of which keeps them perpetually crippled. All such devices work an incalculable injury to the teaching of history and but postpone rather than hasten the time when the subject will rank with others now successfully taught. As long as text-books are arranged for weaklings, just so long will weaklings persuade themselves that a correct method of teaching can be substituted for a knowledge of the subject to be taught.

An equally serious defect is the frequent failure on the part of teachers to see clearly the end in view and to adapt the means to the end. This is particularly noteworthy in that part of history teaching where an elementary knowledge of psychology could reasonably be assumed. How much this ignorance is to be deplored can be realized from a partial enumeration of some of the most frequent errors made as the result of it. The imagination is repressed through undue insistence in the first years of the child on technical accuracy of detail, with the result that in later years the boy has lost all power of vivifying the past, and that history has become a dull, deadening record of events all alike, to him, unimportant and uninteresting. Enthusiasm is quenched by premature insistence on the critical attitude, and by the presentation to children of so-called "true" pictures of those whom the world has revered as its heroes—pictures that present, however, not so much the truth as distorted and magnified versions of blemishes the world has gladly forgiven and forgotten for the sake of a great work accomplished and a noble life lived. At a time when the boy should be interested in synthesis, when he should be seeing the unity, not only between the parts of history, but between history and his other studies, he is taught to put the record of the past on a dissecting table, with the inevitable result that, by a process of analysis and dissection, all vital interest in a living past is crushed out. The judgment is prematurely forced, and demands made on it that cannot be met by the immature mind of the boy. The result is overconfidence in the wisdom of his own conclusions, a readiness to generalize from one particular, or from no particulars at all, and a warped, distorted conception of both past and present.\* The creative

\* Illustrations of this particular danger are numerous in the question set for entrance to college, *e. g.*, "The effects of Alexander's conquests on civilization," "Give your estimate of Athenian democracy," "What is the philosophic basis of asceticism?" "Do you regard further annexation of territory to the United States desirable?" etc.

faculty is unduly stimulated, and boys are encouraged to attempt so-called "original" work at a time when their minds are naturally seeking to combine into an organic whole the facts already amassed, and when they are alert and anxious to increase their stores. The natural order is inverted, and special periods are studied before the boy has sufficient knowledge of the great events and developments in the world's history to profit by such study. He enlarges his knowledge by increasing the radius of a segment, not by developing the segment into a circle. His point of view remains stationary, and he lacks historical perspective. Thus the teacher of history, through a failure to apply to his work the simple fundamental laws of psychology, has no reasonable appreciation of the end he is to seek or of the means of reaching that end.

A fourth serious defect is the confusion of the object of the teacher of history with that of the writer of history. It is the function of the historian to collect historical material from every source, to classify and collate this material, and finally to interpret it. The teacher, on the other hand, must accept in his teaching the results of the investigations of historians. He must, indeed, be himself a creator, at least in an elementary way, if his teaching is to have vitality, but it does not follow that he must teach in the class room the results of his own investigations regardless of their appropriateness to the work of the class, or that he must force creation on the part of his pupils. In his relations with his class, it is rather the function of the teacher to act as a "middleman" between the historian and the pupil, to take the results of the historian's work and to elucidate them to the class, to see that the pupils are well grounded in the fundamentals that have been agreed on by the consensus of historical scholars before undertaking, with a class below college grade, the work either of criticism, of investigation, or of reconstruction. The teacher does indeed often deal with the same material as does the historian, but he uses it, not for the purpose of construction, but for that of elucidation. Until his pupils have acquired maturity of judgment, he must in his teaching accept at their face value the results of the investigations of the historian.

Still another danger in the teaching of history assumes the form of a desire to make history the vehicle for our philosophical conceptions of the past, present, and future. This desire to know and to teach the philosophy of history is a reaction against that spirit which

saw in the events of the past only an enumeration of facts, a skeleton without flesh and blood. This reaction has been inevitable, and in a sense is not to be regretted; but it has brought its own attending dangers. For the type of mind that has first grasped the idea that it is not all of history to teach Barnes's text-books memoriter from cover to cover, the transition is easy to the Hegelian conception that in Greece the mind was introspective; among the Romans the mind was resolved into generality, which makes mind itself universal; while in Christianity the mind first withdraws into pure introspection in communion with the universal; then follows the reconciliation, which is the introspective mind transforming the world (Diesterweg's summary). A disciple of this school, whose sublime indifference to the fact that the Norman Conquest came in the eleventh rather than in the first or the nineteenth century, had been the despair of his instructor, when asked what material he would select for a class in history in the grammar grades, replied promptly, "I would teach them the philosophy of history." It is this spirit that teaches in our high schools the philosophical, psychological, and physiological aspects of the French Revolution, that discusses history, as has been said of Mr. Carlyle's *Frederick the Great*, "in the past potential subjunctive," and all this without any sound, accurate knowledge of the facts on which the conclusions of others have been based.

Yet one more defect may be enumerated, and that is the one that comes from the adaptation of the old saying into "whatever is new, is right." This, again, is a reaction against certain misconceptions of the subject-matter of history. Since Mr. Green wrote his *Short History of the English People*, in protest against the previous exclusive consideration of military and political affairs, it has become the fashion to decry every history that does not treat of "the people." The protest has been well made; but there is danger that the teacher who welcomes emancipation from the drudgery that compelled the memorization of all the campaigns of the Revolutionary War will forget that

"Civlyzation doos git forrid  
Sometimes upon a powder cart."

There is a temptation to overlook the fact that we are conscious of our political constitution, as our physical body, only when it is out of order, and that the study of preventive politics, like preventive medicine, has a proper place. The fault of all early writers and teachers of

history was not in the consideration, but in the exclusive consideration of military and political affairs. He errs in like degree who teaches that these phases of a nation's life can be ignored. He is wise who sees them in their proper relation to other phenomena of society.

If these, and other defects not enumerated, are to be eliminated from the instruction at present given in history, it can only be through such coöperation of all interested in the subject as will result in the contribution by each of the results of his own theories, knowledge, observation, and experience.

### VIII.

#### HISTORY IN THE PROGRAM.

The fullness with which the principles underlying the selection of material have been elaborated in the previous chapters makes it unnecessary to go into great detail in suggesting an outline of the work to be recommended in history. It is, indeed, far more important to agree upon fundamentals than upon details, since the latter must be adapted more or less to individual tastes, interests, surroundings<sup>2</sup> and necessities. The following scheme of work, however, is suggested in the belief that it can be justified not only by appeal to educational experience, but that it can also be defended as practical inasmuch as it is in principle already carried out either wholly or in part in many schools, both in this country and in Europe.<sup>2</sup>

*Grades I and II.*—Stories from the *Iliad*, the *Odyssey*, the *Æneid*, the *Sagas*, the *Nibelungen Lied*, stories of King Arthur, Odin, Hiawatha; *Robinson Crusoe*, *Arabian Nights*.

*Grades III and IV.*—Biographies of characters prominent in history: *Greece*: Lycurgus, Solon, Darius, Miltiades, Leonidas, Pericles, Socrates, Alexander, Demosthenes, Plutarch; *Rome*: Romulus, Virginia, Horatius, Cincinnatus, Regulus, Hannibal, Cato, Pompey, Cæsar, Agricola; *Germany*: Arminius, Alaric, Charlemagne, Henry

<sup>2</sup> One illustration of this may be seen in the study of American colonial history. It is obviously of interest in the Hudson river valley to study with some care the survivals of the Dutch occupation of that valley, as it is of equal interest in Louisiana to study the survivals there of French occupation. The underlying principle in each case is the same, but the exchange of details would lessen the interest on the part of those studying them.

<sup>2</sup> A part of this plan, with some variations, has already been published in the *Report of the Committee of Seven*.

IV., Frederick Barbarossa, Gutenberg, Charles V., Luther, Frederick the Great, Bismarck; *France*: Clovis, Charlemagne, Louis IX., Joan of Arc, Bayard, Palissy, Francis I., Henry IV., Richelieu, Napoleon; *England*: Alfred, William I., Richard I., Warwick, Elizabeth, Sidney, Raleigh, Cromwell, Pitt, Clive, Nelson, Stephenson, Gladstone; *Southern Europe*: Mohammed, Francis of Assisi, Loyola, Prince Henry, Isabella, Columbus, Lorenzo de Medici, Michel Angelo, Galileo, Garibaldi; *Northern Europe*: Robert Bruce, William of Orange, Henry Hudson, Gustavus Adolphus, Rembrandt, Peter the Great, Kossuth; *America*: John Smith, Miles Standish, William Penn, La Salle, Patrick Henry, Franklin, Washington, Daniel Boone, Lincoln, Robert Lee.

These names are suggested, not as a final selection to be rigorously adopted, but as indicating one way of arousing interest and of conveying historical information at the age when ideas of time and place relations are only imperfectly developed, but when interest in individuals is keen and active. The list may be changed *in toto*, but the principle still be retained.

The plan suggested for the first four grades implies that the object is to foster interest in the past and to stimulate the imagination by presenting vivid pictures of the early heroes of the world, that the method used is to be wholly the oral one,\* that the stories are to be united with lessons given in language and in geography, that the selection of myths and stories should aim to give universal rather than particular notions, and that the teacher should have a sufficient acquaintance with history and literature to be able to decide wisely concerning the selection to be made.

*Grade V.*—Ancient history to 800 A. D. Simple narrative accounts and studies of the picturesque features of life in the valley of the Nile and that of the Tigris and Euphrates, with some account of the conquering expeditions of the Persians; the story of the invasions of Greece by Persia and of the relations of the great heroes of Greece to their own cities; the expeditions of Alexander and the absorption of Greece in Rome; the founding of Rome and its absorption of the Italian peninsula; the Punic wars and the republic under Julius Cæsar; Augustus and the Empire; Constantine and Christianity; the Germanic invasions; the rise of Mohammedanism; the work of Charlemagne.

\* It is unfortunate that in the training of teachers greater attention should not be given to the art of story-telling.

*Grade VI.*—Mediæval history. The beginnings of Germany, France, Italy, and England; the Norman Conquest; Henry IV. and Hildebrand; the mediæval castle and pictures of life within and without; the Crusades; the Hundred Years' War; Constantinople and the Turks; inventions and discoveries.

*Grade VII.*—Modern history to the present time. Charles V. and his connection with Spain, Germany, and the Reformation; England under Henry VIII. and Elizabeth; Francis I., Charles IX. and the civil wars in France; Philip II. and the Dutch revolt; the Civil War in England; Cromwell and the Commonwealth; Louis XIV. and the struggle with Holland; the French Revolution; the American Revolution; the revolutions of 1830 and 1848; the German Empire, the French Republic, the Kingdom of Italy; England of today.

*Grade VIII.*—American history. The main outlines of American history.

The object to be sought in this first complete survey of the chief events in the history of Europe and of America is to afford material for stimulating the enthusiasms of the boy. If, to a certain extent, military operations occupy a place in the foreground, it is because it is physical, rather than moral, heroism that first appeals to him, that his first heroes have more often than otherwise been military heroes, and that in his first complete survey of the world's history he seeks a background for these heroes.

The method to be employed should be that of a simple text-book, supplemented by narration by the teacher, by illustrative material in the form of interesting contemporaneous narratives, and by photographs, slides, visits to museums, and other means of vivifying the past. At every possible point the work in history should strengthen and be strengthened by the work in language and in geography.

The reasons for recommending the preliminary survey of European history before taking up American history and before taking up the study of the same period in the high school are that the underlying principle is similar to one that is in successful operation in Germany—educational principles discovered by one group of instructors and successfully put into practice by them can be adapted to meet the needs of other groups of instructors without the necessity of rediscovery; that it gives a good basis for high-school work, since it follows the law "that one obtains knowledge by adding to the ideas which one already has, new ideas organically related to the old;" that the



substitution of a brief course in European history for a portion of the American history now taught will conduce to a better appreciation of the important facts in American history, and that, as a result, the pupil will have a better understanding of the history of America after one year of special study given to it than he now has after two years' study without this preliminary acquaintance with European history; that it gives an outlook into the world of history and of literature to those who cannot complete a high-school course, and thus gives them resources within themselves that must be of value in their future lives; that it would do something to make fruitful what is now too often a barren waste—the curriculum of the primary and the grammar grades; that its adoption would do something to raise the educational and professional qualifications of teachers, since the knowledge required to carry it out would be more extensive than that demanded by the present curriculum; that through it something would be done to unify the subjects in the curriculum, which is now too often vague and formless; that since many schools in America now have a course similar to the one here advocated, it is a practical one.

*Grade IX.*—Ancient history to *circa* 800 A. D.

*Grade X.*—Mediæval and modern history from *circa* 800 A. D. to the present time.

*Grade XI.*—English history.

*Grade XII.*—American history, including civil government.

The object of the work in the high school should be to provide a unifying principle in the study of history, to widen the horizon of the boy, to add to and develop the knowledge that he already has.

The means employed should be a text-book covering the ground already covered in the grammar grade, but doing so in a more advanced manner; also, parallel readings, special reports, and other means that may suggest themselves to the teacher as practicable and desirable methods of reaching the end sought. In considering the question of methods it must be added that two principles are never to be lost sight of,—first, that what the boy still needs is not philosophical generalization, but concrete facts and illustrations;<sup>2</sup> and second, that as in the preceding grades the work in history is to be closely related to the other parts of the curriculum.

The selection of the material recommended involves a second complete survey of history, but a survey from a higher point. In his first

<sup>2</sup>*Report of the Committee of Seven*, p. 57.

survey the boy has had little interest in problems of government, in the development of art and of literature, in the causes and results of great movements, but his interest in all these questions is now being awakened, and, at the same time, the survey in the grammar grade has given a foundation on which these new interests may be built up.

The specific way in which the material selected for the second survey may be differentiated from that of the first survey is indicated in the *Report of the Committee of Seven*.<sup>1</sup>

The fundamental principle in these recommendations is that the best grasp of historical facts and the best training in "historical-mindedness" is that which is gained through the study of history in several concentric circles. In no country has the teaching of history been so successful as in Germany, and we may well look to her for an example in the selection and arrangement of historical material. In every German state the program is arranged on this principle, and this is in part an explanation of the great success of historical study in that country.<sup>2</sup> The same principles have been carried out with equal success in more than one school here.<sup>3</sup>

These suggestions have been founded on experience and observation, and they are believed to be in accord with the development of educational theory. The plan here presented is suggested, not as being ideal in itself, but as one that more nearly approximates that ideal than that often found in the public schools; it is suggested with full realization of the fact that it possibly cannot be at once adopted *in extenso* by a single school; it is recommended because of the belief that it is better to have an ideal toward which to work than to remain content with unsatisfactory conditions.

## IX.

### CONCLUSION.

The attempt has been made to set forth some of the essential and fundamental differences between the original records on which the historian bases his work and the history that has been derived from it.

<sup>1</sup>Pp. 53-85. This part of the *Report* was written by other members of the committee, but it formulates my own views on the subjects touched upon.

<sup>2</sup>A more detailed account of history in the German schools is given in the *Report of the Committee of Seven*, Appendix III.

<sup>3</sup>Specific programs will be presented at the February meeting.

If this difference is clearly perceived, it is believed that much of the ambiguity and confusion that has attended the discussion of the use of the sources in the elementary and secondary grades will be cleared away; that the place of the sources in historical writing will be recognized, but that no attempt will be made to give them a factitious importance in the grades; that they will not be distorted from their necessary and legitimate uses by the historian; that they will not be converted into stilts for the use of the immature student.

The attempt has also been made to show the development in the ideals of the historian in regard to his selection of material, and that personal tastes and interests have largely determined the nature of the literary form in which the results of his investigations are given to others. The object of the historian has also shifted from the consideration of somewhat narrow interests to those that are world-wide, with the result that some have seen in this very widening of interests the disintegration of the subject itself. The result, however, has been not to remove history from the subjects to which students turn their attention, but to clarify existing ideas in regard to its relation to other branches of human knowledge.

But not only has confusion existed in regard to the mutual relations of the record and of the history derived from that record; not only has there been a failure to see clearly the relationship between history and other subjects—there has even been uncertainty as to the very object to be kept in mind in the teaching of history, an uncertainty largely growing out of the failure to consider the teaching of history as depending on psychological laws.

This confusion, uncertainty, and lack of clearness of thought has been far from strange—indeed, it is rather to be wondered at that so much progress has been already made. History is a new subject in the curriculum, and it has been difficult to determine whether it was to supplant one of the older subjects, whether it was to be an excrescence in the curriculum, or whether it was to take a natural place and give its friendly support to other branches. It must also be remembered that the very study of the science of education is in itself a new one, at least in America, as the existence of this society evidences, and that the place to be occupied by history could not be determined before a systematic study of educational psychology had been made.

It lies in the power of a body of men like those comprising the National Society for the Scientific Study of Education to bring about

great improvement in the teaching of history in this country through its insistence on the application of a rational study of psychology to the teaching of history, and an equal insistence on the necessity of a knowledge of history on the part of those who undertake to teach it. No study of method can take the place of a study of history. No method can take the place of a genuine love of history for history's own sake. No method, however successful it may have proved with one teacher, can be slavishly imitated by another. Every book on method is, in one sense, useless to the good teacher. Method can only be the seed that is planted on fertile soil. Unless the seed—the method—changes its form and develops into the plant it ceases to have life. Any method bears fruit only after it has been transformed in the mind of the living teacher, and has blossomed into new forms.

## TITLES OF WORKS CITED.

No attempt has been made to give a bibliography of the subject, but for convenience the following list is added, giving the full titles of the works referred to in the text :

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PROPOSED PLAN OF WORK  
FOR  
THE NATIONAL SOCIETY FOR THE SCIENTIFIC STUDY  
OF EDUCATION

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THE scientific study of any subject implies an effort to get at its fundamental principles, and to make as complete and thorough investigation of its problems as specialists in that department can make. The principles upon which education may be safely based are still more or less in dispute, and the foundations of education as a science are still open to serious study and discussion. But especially when we leave the field of theoretical pedagogy, as based upon physiology, psychology, and ethics, and turn to the practical applications, many difficult problems still confront the teacher.

There are many organizations of teachers in clubs and associations, which are of great benefit in their helpfulness to teachers, but there is still need of an organization of educational specialists who will take up, one after another, the more difficult problems for the purpose of giving them complete investigation and rigid study.

Those college and university teachers who are working in departments of education are especially qualified by training, experience, and by the nature of their professional work to undertake this sort of study. A goodly number, also, of teachers in normal schools are working in a directly practical way upon the large educational problems, and their experience will be of great service. Many, also, of the superintendents in city school systems are deeply interested in the working out of great educational problems. Many of the college and university specialists in history, natural science, literature, political science, and sociology are better equipped than anyone else for scientific investigations along the line of educational work which touches their special subjects.

There are, therefore, both among men and women devoted to educational work, a large number who are deeply interested in promoting the study and expert investigation of important educational problems.

The general organization and framework of such a society is already provided for in this society for the Scientific Study of Teaching. The whole efficiency of this organization must rest in its executive committee, of which the president and secretary are members.

This executive committee of six members has it within its power to lay out a campaign into the fields of educational research and discussion which may prove of the highest value. In the first place it is its business to see that there be submitted to the society each year strong scientific papers on one or more leading questions. The expression "strong scientific papers" should be given a more pronounced meaning. Each paper which receives the approval of the executive committee as worthy of serious discussion at its sessions, should survey the whole subject completely from a strictly scientific point of view, commanding also its entire literature and such resources of experience as are necessary to a sound judgment. Narrow, one-sided discussions should not be accepted by the committee. Papers which come up to this high standard cannot be worked out in a few weeks. They can only be prepared by those who have had leisure for many-sided study and thought upon all phases of an educational problem. Age, experience, and ripe study by those who have had opportunity for specialization can alone furnish the best products.

It is not difficult to set up in theory such a standard of superior work as this, but the more serious difficulty for the executive committee is found in the effort to provide for a regular succession of such papers by urging qualified specialists and experts in different parts of the country to plan this kind of work two or three years ahead of its final publication. If such a thing were possible, it would be well to make a systematic distribution of the leading questions among trained and interested specialists, who could be picked out here and there in various institutions of the land.

In order to facilitate the work of the committee in this kind of distribution of topics, it seems advisable at the annual sessions to discuss the general question: "What are the leading topics demanding study and discussion, and who are the men and women best fitted by professional training and experience to give them a thorough and systematic treatment."

Such papers as we have in mind would be too long for publication in educational journals. They come much nearer those complete scientific monographs on special subjects which are sometimes published in pamphlet form in this country and in Europe by specialists, or as the result of special investigations. There is, however, a special advantage in bringing such superior monographs or treatises into the field of free and full discussion before a society of educational specialists.

The executive committee itself should consist of broad-minded specialists who represent the principal fields of educational thought. It will demand considerable time upon the part of the executive committee to give the papers presented a satisfactory review preparatory to publication in the yearbooks. It is to be desired that no papers be published merely upon the reputation of the author, but wholly upon account of their scientific worth.

In accordance with plans followed out in the old society, the yearbook will be published in two parts in time for the meeting of the Department of Superintendence, in February, and for the meeting of the National Educational Association in the summer. In order to accomplish the best results, it is desirable that the papers shall be published at least two months before the time of meeting for discussion. One of the most serious difficulties has been found in the effort to secure a careful study of the papers before the meeting for discussion. This certainly must be accomplished, if good results are to be achieved.

In order to secure this, only the active members of the society, who are expected to give the papers a thorough study, are allowed to participate in the discussion. Exception to this rule may be found in the case of those specialists, not members, whom the author of the paper desires especially to invite to a share in the discussion. It will be a good plan for those who have not read the papers with careful scrutiny to abstain from sharing in the discussions. There is no economy in a loose and incoherent discussion which is not based rigidly upon the points of view taken by the writer of the paper. Misunderstandings and irrelevant debate are the necessary result.

There should be at each of the half-year meetings one session of perhaps two hours at which only the active members are present, and only those of the active members take part in the discussion who have qualified themselves by thoughtful study of the paper. It may be found difficult in practice to apply this rule of exclusion, as free



opportunity must be offered to the active members, but it may be possible to establish this tradition of close limitation of discussion so firmly that individual members will have a conscience against violating it.

The best results, therefore, are not likely to be attained in large assemblages of several hundred teachers where elaborate speeches are to be made, but rather in informal round-table discussions, where truth may be sought by candid interchange of opinions, by question and answer, and by simple discussion, free from oratory.

It seems advisable also to hold a second meeting, for all the members of the society, where the whole subject is thrown open to popular discussion. Such has been the character heretofore of meetings of the Herbart Society, and they seem to have served an excellent purpose. These open meetings give an opportunity for many of the teachers to become interested in the work of the society, and to bring about a much wider distribution of its literature among thoughtful teachers.

If the plan above outlined of publishing the papers two months or more before the meeting and of providing for close and rigorous discussion proves feasible, it may be possible also for the active members in different parts of the country to gather a class of interested people together for the reading and discussion of the papers at home before coming to the national meeting. This is by no means impossible, and, if it could be brought about, would insure the right kind of study of the papers as a preparation for the general meeting.

An equally valuable plan can be followed by superintendents and teachers in educational departments of colleges and normal schools, if they will collect their teachers and friends on their return home from the national meeting for the reading, study, and discussion of the papers. This has already been done to a large extent in many parts of the country with the publications of the Herbart Society, and considerable assistance has been rendered in such studies by publishing at the end of the yearbook a list of references and a course of readings along the line of important topics. A large number of local clubs were organized in different parts of the country, and accomplished in this way excellent study work. This plan might be followed out with advantage in the future work of the society, and still more complete lists of references on important topics be furnished in the yearbook for the purpose of encouraging this kind of study.

The careful discussions at the half-yearly meetings of the society

are likely to give a broader and more critical view of the subject than the paper itself. It seems desirable that the substance of these discussions should be worked over by the secretary of the society, published, and sent out, as soon as feasible, to all the members as a supplement to the original papers. In some cases members may wish to put their discussion or criticism into complete form as a contribution to the general discussion, and these, if approved by the secretary, could be incorporated into the supplements. This plan of publishing a supplement containing the discussions of the papers was carried out at several meetings of the Herbart Society, and proved an interesting and satisfactory addition to the yearbooks.

In the discussion of an important topic which involves various interesting and unsolved difficulties, it may be necessary to provide for a series of papers running through two or more of the yearbooks, so as to bring the entire treatment into a complete form and provide that the whole subject be properly canvassed in the discussion. There are indeed a good many subjects of pressing interest to the schoolmaster which cannot be treated in a single paper, such for example, as the social function of the school, the relation of technical education to the common school, and others.

It is much to be desired that the author of any given paper shall be present at the meeting and participate in its discussion. It has been difficult heretofore in many cases to secure this result, and it may be well for the society to pay the expenses of the author, made necessary by attendance upon the meeting, so as to secure his presence. At least this proposition may be worthy of consideration by the society.

In order to begin the sifting-out process by which the leading topics deserving discussion may be brought to mind and clearly defined, a list of suggested topics is appended. The members to whom this paper is sent are requested to add other topics to the list and to suggest criticisms of the formulation of those already stated. Those having such suggestions of topics or criticisms are requested to send them promptly to the secretary, C. A. McMurry, De Kalb, Illinois. If it seems desirable to those most interested, this whole paper with its series of topics appended, will be published in the forthcoming yearbook of the reorganized society. It may seem worth while to give this proposed plan a careful discussion and criticism at our next meeting in Chicago, February 26, 27, and 28.

## THEMES FOR DISCUSSION

## ELEMENTARY SCHOOL PROBLEMS.

1. The proper organic relation of the kindergarten to the primary school.
2. A plan for organizing into a connected and coherent series the constructive exercises of the kindergarten and primary school, and the manual training and domestic science of intermediate and grammar grades.
3. The principles and plan of a general course in elementary science throughout the grades of the common school.
4. How are the social and industrial life of our time to find fit incorporation into the school life and studies?
5. The function and plan of the course of study in drawing and its relation to other work of the common school.
6. In what studies and grades is an oral method of instruction desirable in the common schools.
7. What can the common school do to promote in children an appreciation of good books and a proper use of libraries?
8. The problem of teaching good English and grammar in the public schools.
9. What is the function of fine art as revealed in literature, painting, sculpture, architecture and music in the common school?
10. How can the complexity of the modern school course be reduced to simplicity so as to preserve a strong discipline and avoid superficiality?
11. How secure the proper balance between intellectual and motor powers?
12. How can city children get the best educational advantages of play?
13. What form of compulsory school law succeeds best in American communities?

## HIGH SCHOOLS.

1. What standard courses should the public high school in cities furnish?
2. What should be the relation of the courses of study in the high school to technological and industrial schools, to normal schools, to professional schools and universities?
3. To what extent should special training for special callings be provided in the high school?
4. What pedagogical training is needed by teachers in secondary schools?
5. Should the elements of high-school work in languages, mathematics and natural science be taught in the upper grades of the elementary schools?
6. Upon what principles should election of studies be determined in the high school?

7. How reconcile educational ideals of culture, morality, mental discipline and utility in the high school?
8. In what order should the high school teach the natural sciences?
9. To what extent should the laboratory be used in the high school?
10. Shall the high-school student study few or many subjects at one time?
11. Relation of secondary-school science to nature work in the grades.

#### NORMAL SCHOOLS.

1. To what extent can a standard professional course for normal schools be determined?
2. What are the faults and merits of psychological study in normal schools?
3. Should method of instruction be taught as a separate branch of study or only in connection with the teaching of arithmetic, history, etc.?
4. In what relation should the teachers of regular subjects stand to the practice department in normal schools?
5. How should the practice department of a normal school be conducted?

#### UNIVERSITIES AND COLLEGES.

1. What are the functions of a professor of pedagogy at a university?
2. What is the value of the history of education as taught in universities?
3. What are the purposes and values of a psychological laboratory at a university?
4. To what extent has modern child-study determined scientifically, the distinctive periods of physical and mental growth in children?
5. What correspondences have been established by historical and scientific investigations between race development and individual development?
6. What are the merits and faults of a lecture method at universities?
7. What value has the history of philosophy for teachers?
8. Is a practice school necessary in the pedagogical department of a university?

#### SUPERVISION.

1. What system of tests may be best applied to secure well qualified teachers in cities?
2. What is the best system of supervision of grade teachers, by special supervisors, principals, district superintendents, circular directions, from the office, etc.?
3. How can teachers meetings be made most effective for the improvement of teachers?
4. What are the faults and merits of a full and detailed course of study?
5. From what sources do superintendents get the best qualified teachers?

6. How may the individuality and freedom of the grade teacher be best preserved under a good system of supervision?
7. The consolidation of rural schools, its difficulties and advantages.
8. What is the best system of supplying children with text-books in the common schools?
9. Plans of grading and promotion.
10. How to deal with truants.
11. To what extent should the withdrawal of children in intermediate and grammar grades influence the course of study and method of teaching?
12. Compulsory education by the state.

PROCEEDINGS  
OF THE  
MEETING FOR THE REORGANIZATION OF THE NATIONAL  
HERBART SOCIETY.

AT THE AUDITORIUM HOTEL, CHICAGO, THURSDAY EVENING,  
FEBRUARY 28, 1901.

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The meeting was called to order by Professor Charles De Garmo, in accordance with the circular notice sent out by a committee of the old society. Professor De Garmo was elected chairman of the meeting and Charles A. McMurry secretary.

A statement was made by the secretary in regard to the purpose of the meeting, namely, the reorganization of the old society under a different name and with a somewhat modified purpose. There was considerable general discussion of a suitable name, and various propositions were made. The name finally agreed upon was *The National Society for the Scientific Study of Education*. A constitution was then adopted by vote of those members present and wishing to be regarded as members of the reorganized society.

After the adoption of the constitution and in accordance with its provisions, an election of officers was held as follows: for president, Nicholas Murray Butler; secretary-treasurer, Charles A. McMurry. Four additional members of the executive committee were elected, as follows: Charles De Garmo, William L. Bryan, David Felmley, and Edward R. Shaw.

FINANCIAL STATEMENT.

A financial report of the condition of the National Herbart Society was made by the secretary, showing that all the bills of the old society for printing, publications, and other expenses had been met and paid, and that a considerable stock of the old yearbooks and supplements was still on hand. This financial statement was accepted and approved by a vote of the society. It was voted that the secretary of the National

Herbart Society should be allowed from the future sale of the yearbooks \$200, partly in payment of expenses incurred, and partly for services rendered. A motion was also carried that the secretary of the reorganized society should be allowed \$50 for clerical help during the ensuing year.

#### GENERAL PLAN AND PURPOSE OF THE SOCIETY.

A few of the leading purposes of this society as reorganized may be briefly stated as follows :

1. To secure strong original papers by leading specialists in education upon paramount topics which demand thorough investigation and study.

2. It shall be the special province of the executive committee to set a number of specialists at work upon important topics, so that thoroughly complete and masterly papers may be in readiness from time to time for publication in the yearbooks and for discussion at the meetings of the society.

3. The yearbooks of the society containing these papers shall be sent out to the active members and others interested several weeks before the meeting, for discussion, so that they may be read and carefully studied before the time set for discussion.

4. Only those active members who have made an exhaustive study of the papers are expected to take part in the discussion.

5. Reports of these discussions may be printed where it seems advisable.

#### A BOUND VOLUME OF THE YEARBOOKS OF THE NATIONAL HERBERT SOCIETY.

The five yearbooks and corresponding supplements of the National Herbart Society from 1895 to 1901 have been well bound in a single volume, which will be sent to any address for \$5. This volume of the yearbooks of the National Herbart Society has been in much demand for use in public and private libraries. In order to make this volume complete for all the publications of the society, three of the supplements were reprinted. The yearbook and supplement for any one year may be obtained from the secretary at the rate of \$1 for each year's publications.

#### NEXT REGULAR MEETING.

The next regular meeting of the society will be held at Chicago in conjunction with the Department of Superintendence, February 25, 26,

and 27, 1902. A yearbook will be sent to active members and to others who desire it in the latter part of January, containing the papers for discussion. Those associate members who desire copies of this yearbook should send in their names to the secretary, C. A. McMurry, University of Chicago, with the fee of \$1. All persons desiring it are eligible to associate membership.

The principal paper in the forthcoming yearbook is on "History in the Schools," by Miss Lucy M. Salmon, of Vassar College. The general meeting for its discussion will be held Thursday, February 27, at 2 P. M. A special meeting for the active members of the society will be held Friday, February 28, at 9:30 A. M., at the Auditorium Hotel, Chicago.



CONSTITUTION  
OF  
THE NATIONAL SOCIETY FOR THE SCIENTIFIC STUDY  
OF EDUCATION.

[REORGANIZED NATIONAL HERBART SOCIETY.]

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ARTICLE I.—ITS OBJECT.

The name suggests the general purpose of the society. It contemplates a serious, continuous, intensive study of educational problems. It stands for no particular creed or propaganda. In aim and spirit and method it seeks to be scientific.

ARTICLE II.—PLAN OF ORGANIZATION.

SECTION 1. *Members.*—(1) The society consists of active and associate members.

(2) Active Members. The active membership shall, for the present, be limited to one hundred. Only active members may take part in the discussions.

(3) The chief qualification for active membership shall be the possession of time, ability, and inclination to undertake a serious scientific study of educational problems. A fee of three dollars per year for each active member will be charged.

(4) Vacancies, when occurring in the active body, shall be filled by election at the first meeting.

(5) Associate Members. Anyone may become an associate member by paying a yearly fee of one dollar. Such members shall be entitled to receive the publications of the society and to attend its public meetings.

SEC. 2. *Officers and Committees.*—The officers of the society shall consist of a president, a secretary-treasurer, and executive committee, who shall be elected yearly at the winter session of the society. The executive committee shall consist of the president, the secretary, the treasurer, and four other active members of the society, of whom two are to be elected each year at the winter meeting. It shall be the duty of the executive committee to carry into effect the will of the active membership respecting the subjects to

be discussed at its meetings, the matter which is to appear in its publications, and to present at each meeting names of suitable candidates for admission to active membership. Election to active membership is by a majority vote of the active members present.

SEC. 3. *Publications.*—(1) The society shall publish "The Yearbook of the National Society for the Scientific Study of Education," and such supplements as it sees fit to add.

(2) The time of publishing the yearbook or supplements shall be determined by the committee.

(3) These publications shall be sent to the active and associate members of the society.

#### ARTICLE III.

SECTION 1. *Time and Place of Meeting.*—(1) This society shall meet twice a year.

(2) One of these meetings shall be in connection with, and at the same time and place as, the National Educational Association; the other in connection with, and at the same time and place of meeting as, the Department of Superintendence.

(3) All the details of these meetings shall be determined by the executive committee.

#### ARTICLE IV.

This constitution may be amended at any regular winter meeting by vote of two-thirds of the active members present.

## LIST OF ACTIVE MEMBERS.

Frank G. Blair, State Normal School, Charleston, Ill.  
Richard G. Boone, superintendent, Cincinnati, Ohio.  
Francis B. Brandt, Central High School, Philadelphia, Pa.  
Elmer E. Brown, University of California, Berkeley, Cal.  
George P. Brown, editor, Bloomington, Ill.  
Martin G. Brumbaugh, commissioner of education, San Juan, Porto Rico  
William L. Bryan, University of Indiana, Bloomington, Ind.  
George V. Buchanan, 614 W. 7th street, Sedalia, Mo.  
Edward F. Buchner, New York University, New York City.  
Frederick Burk, State Normal School, San Francisco, Cal.  
Nicholas Murry Butler, Columbia University, New York City.  
C. P. Carey, Wisconsin School for the Deaf, Delavan, Wis.  
Clarence F. Carroll, superintendent, Worcester, Mass.  
John W. Cook, State Normal School, DeKalb, Ill.  
Ellwood I. Cubberley, Stanford University, California.  
Washington S. Dearmont, State Normal School, Cape Girardeau, Mo.  
Charles De Garmo, Cornell University, Ithaca, N. Y.  
John Dewey, University of Chicago, Chicago, Ill.  
Edwin G. Dexter, University of Ill., Champaign, Ill.  
Richard E. Dodge, Columbia University, New York City.  
F. B. Dresslar, University of California, Berkeley, Cal.  
Samual T. Dutton, Columbia University, New York City.  
Charles B. Dyke, Kamehameha School, Honolulu, Hawaii.  
W. H. Elson, superintendent, Grand Rapids, Mich.  
Frank A. Fitzpatrick, publishers' agent, Boston, Mass.  
David Felmley, State Normal University, Normal, Ill.  
Charles B. Gilbert, superintendent, Rochester, N. Y.  
Newell D. Gilbert, superintendent, DeKalb, Ill.  
J. P. Gordy, Ohio State University, Columbus, Ohio.  
James M. Greenwood, superintendent, Kansas City, Mo.  
William N. Hailman, superintendent, Dayton, Ohio.  
Reuben P. Halleck, Boys' High School, Louisville, Ky.  
Rufus H. Halsey, State Normal School, Oshkosh, Wis.  
Walter L. Hervey, Department of Education, New York City.  
Edgar L. Hewett, Normal University, Las Vegas, N. M.  
M. J. Holmes, State Normal University, Normal, Ill.  
Wilber S. Jackman, Chicago Institute, Chicago, Ill.

- Jeremiah W. Jenks, Cornell University, Ithaca, N. Y.  
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Charles H. Judd, Wesleyan University, Middletown, Conn.  
Grant Karr, State Normal School, Oswego, N. Y.  
J. A. Keith, State Normal School, DeKalb, Ill.  
Ossian H. Lang, editor, New York City.  
G. W. A. Luckey, University of Nebraska, Lincoln, Neb.  
George H. Locke, University of Chicago, Chicago, Ill.  
Livingston C. Lord, State Normal School, Charleston, Ill.  
Frank A. Manny, Ethical Culture School, 109 W. 54th street, New York City.  
Guy E. Maxwell, State Normal School, Mankato, Minn.  
William H. Maxwell, superintendent, New York City.  
Charles McKenny, State Normal School, Milwaukee, Wis.  
Charles A. McMurry, State Normal School, DeKalb, Ill.  
Frank M. McMurry, Columbia University, New York City.  
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Will S. Monroe, State Normal School, Westfield, Mass.  
Ernest C. Moore, University of California, Berkeley, Cal.  
Frank Morton, Lowell High School, San Francisco, Cal.  
Theodore B. Noss, State Normal School, California, Pa.  
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Spencer Trotter, Swarthmore College, Swarthmore, Pa.  
C. C. VanLiew, State Normal School, Chico, Cal.  
James H. VanSickle, superintendent, Baltimore, Md.  
Samuel Weir, New York University, New York City.  
John J. Wilkinson, superintendent, Mattoon, Ill.  
Lightner Witmer, University of Pennsylvania, Philadelphia, Pa.  
L. E. Wolf, superintendent, Kansas City, Kan.















# THE FIRST YEARBOOK

OF THE

## NATIONAL SOCIETY FOR THE SCIENTIFIC STUDY OF EDUCATION

PART II

### THE PROGRESS OF GEOGRAPHY IN THE SCHOOLS

BY

W. M. DAVIS

HARVARD UNIVERSITY

A PAPER PREPARED FOR DISCUSSION AT THE GENERAL MEETING OF THE SOCIETY  
AT MINNEAPOLIS AT THE TIME OF THE NATIONAL EDUCATIONAL ASSOCIATION,  
JULY 9, 1902, AT 2 P. M.; ALSO AT THE SUMMER SESSIONS OF UNIVERSITIES  
AND NORMAL SCHOOLS IN DIFFERENT SECTIONS OF THE COUNTRY

EDITED BY

CHARLES A. McMURRY

CHICAGO

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1902

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THE EXECUTIVE COMMITTEE  
OF THE  
NATIONAL SOCIETY FOR THE SCIENTIFIC STUDY OF  
EDUCATION

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## NOTICE TO MEMBERS.

The second part of the YEARBOOK for 1902 is herewith sent to each active and associate member.

Besides the meeting for the discussion of these papers on geography at the National Educational Association at Minneapolis, it is expected that meetings will be held this summer at the various summer sessions of universities and normal schools, where these papers on geography can be discussed. It may be well also to arrange meetings for the discussion of the papers on history, previously published in Part I.

The active members are specially requested to organize such meetings and take full charge of them. Let a place and time of meeting be arranged and those desirous of studying the papers be supplied. Any member may secure copies of the YEARBOOK at the usual rates by addressing the University of Chicago Press. Those taking charge of the meetings are requested to report them later to

C. A. McMURRY, *Secretary*.





# THE FIRST YEARBOOK.

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## THE PROGRESS OF GEOGRAPHY IN THE SCHOOLS.

By W. M. DAVIS.

1. *Encouragement from recent progress.*—The most notable characteristic of the condition of geography in the schools during the last ten years is the marked improvement that it has experienced. The improvement accomplished, and still in progress, is most encouraging. The rate of advance is as great as is consistent with sound development. Chief among the impulses toward this march of improvement in geography, as in various other school subjects, have been the reports by committees of specialists, particularly those published by the National Educational Association. These reports have furnished many excellent suggestions which superintendents and teachers have either adopted or discussed; and the discussions thus excited may be considered as beneficial to the subject over which they are held, as were the improvements that were immediately adopted. All this is most gratifying. Let reports, improvements, and discussions continue. Geography in the schools will thrive on them.

2. *Direction in which further progress is most needed.*—There remains, however, much to be done. The one thing which would be above all others most helpful in continuing the progress already made, is the development of a higher ideal as to the content of geography among mature students.

3. *Geography is too generally treated as an elementary study.*—It is a singular fact that there are, particularly in this ambitious country, very few students of geography as a mature subject. Most persons of full age who are directly concerned with geography are engaged in presenting its supposed elements to immature pupils. Very few are engaged in developing geography for mature students. Very few mature students are carrying forward original research in geography of a grade at all comparable to the research now so generally accomplished in various standard mature subjects. How many original

investigators in geography do you know? Ask the same question concerning physics and chemistry, geology, botany and zoölogy, mathematics and astronomy, philology, history, and literature, and make note of the contrast that all these maturely developed subjects present with geography. All these other subjects have habitual representation in our colleges and universities. Many of them engage the attention of professional experts. Geography is seldom recognized in these higher educational reaches. Nor are there, except rarely, professional positions in which mature geographers are employed on advanced work. There are truly many topographers, many pilots, many clerks in post-offices and express companies, many officers of our consular service, all of whom have contact of one kind or another with geography; but there are very few professional geographers, deservedly so called. It is true that many persons travel far and wide over the world, and some of them write very entertaining books; but travel no more makes the traveler a geographer than it makes him a botanist or an historian. Mere facts of occurrence and location have about the same rank in geography that words have in literature, dates in history, and specific names in botany and zoölogy. A traveler's narrative is no more a geographical work because it makes mention of a hill and a harbor than it is a botanical work because it tells something about a forest and a swamp. It is chiefly among the small body of explorers that we find mature geographers; and yet not all of these brave and energetic workers attempt to develop the more scientific aspects of geography. Explorers are generally men of resolute action rather than of an analytical turn of mind; and they too often have about the same relation to mature geography that collectors of wild animals have to mature zoölogy. All of these workers, professional and amateur, contribute their sheaves of fact to the total gathering of geographical knowledge; but the facts thus gathered stand in need of discussion and co-ordination; the sheaves must be threshed and winnowed. The advanced workers, seriously engaged in separating the grain from the chaff and assorting the grain according to its quality, are few indeed.

4. *Illustration from disputed boundaries.*—The boundaries between nations are frequently defined in terms of topographical forms, and one might expect that here at least a mature understanding of geography would have been developed. But there are at present two serious disputes regarding boundaries in which the misunderstandings

arise directly from the treatment of topographical features in an elementary, immature manner. The Argentine-Chilian boundary, as verbally defined in the treaty of 1881, takes no such account of the possible occurrence of transverse, through-going valleys as to predetermine beyond chance of misunderstanding the course of the boundary in such districts where the continental divide departs significantly from the crest line of the cordillera of the Andes. The terms of the treaty appear to have been based on the antiquated idea that mountain ranges must rise between river basins, and that rivers cannot pass through mountain ranges; an idea which, as Prince Kropotkin has shown, has long worked mischief in the cartography of Asia, by placing ranges where none exist, and by omitting them where they occur; an idea which should long ago have disappeared from geography, had the subject been maturely and scientifically developed.

The Alaskan boundary, as verbally defined in the British-Russian treaty of 1825, takes no such account of the possible complexity of mountain form and irregularity of coasts as to preclude misunderstandings that might arise with respect to the summits of mountain ranges, or with respect to outer and inner shore lines. It is true that the treaty here in discussion was made three-quarters of a century ago; yet even at that time the occurrence of detached and discontinuous ranges and of irregular coasts was perfectly well known, and it would seem that the commissioners who framed the treaty might have avoided all possible ambiguity had they based their definitions on a more mature study of topographical forms. I do not propose to express here any opinion regarding the rights in either of these disputes; but only to call attention to the fact that the disputes have resulted from an inadequate comprehension and definition of topographical forms; that is, from the employment of an elementary knowledge of geography in the treatment of a problem where an advanced knowledge would have been much more appropriate.

5. *Illustration from immaturity of geographical terminology.*—Any subject that is pursued from elementary teaching through secondary and collegiate study to the highest reaches of independent investigation is always accompanied by an expanding terminology. The terms that suffice for the beginner do not suffice for the advanced student. The new wine of discovery cannot be held in the old bottles of school-day definitions. It is true that the terminology thus developed is sometimes of an embarrassing fulness. It is sometimes unnecessarily

detailed, but there can be no question that it is on the whole of great value. It is well that the specialist should be cautious about introducing new terms; that he should test his inventions by home use before offering them in print to his colleagues. It is true also that of the total number of terms invented by the specialist in this field or that, many perish, and only the needed ones survive in general scientific use. If it were possible to endow all specialists with so much wisdom that they could foresee the needs of the next generation, and invent only such terms as would prove of permanent value, much of the difficulty that is inherent in the question of terminology would disappear; but such wisdom is not granted to investigators any more than to lawmakers. All that can be expected is that each individual should work carefully and honestly, and that the processes of natural selection and the survival of the fittest should operate in terminology as well as elsewhere. The development of new methods and the discovery of new results make the introduction of new terms inevitable. A good name is of great assistance in making the thing named more generally known. A growing terminology is characteristic of all growing sciences.

In reviewing the literature of geography it is remarkable to note that the terminology of school days is so little extended in the productions of mature writers. Consider, for example, the subject of mountains. Look over any school geography and count the nouns and adjectives that are used with a technical meaning in this chapter of the subject; chain, range, peak, summit, ridge, pass, are among them. Now look over the best essay that can be found in which a mountainous region is described by a mature writer for mature readers, and make another count of the same kind. The adjectives will be found to have "grown up;" that is, they comprise a number of more learned words, such as precipitous, stupendous, imposing, formidable; yet none of these are introduced with anything like technical definitions; they are used in a general literary sense such as will be understood by the polite reader. Among the nouns there will be a moderate number of new words, most of which are taken from the local patois of the mountain people, or from the somewhat colloquial language of mountain climbers; but there is nowhere any sufficient indication that these new words are taken from a systematic, consistent, and thoroughgoing terminology of mountain forms. The same is true of nearly all the other divisions of geography. Even in reports so important as those of the

Mississippi River Commission, certain features of the great river and its flood plain go practically unnamed and therefore unnoticed. The small number of technical geographical terms that have been introduced by a few writers have as yet gained little general currency.

The absence of a mature terminology appropriate to mature geographical descriptions is one of the most patent signs that geography is not maturely developed.

6. *Inattention to mature geography has a bad effect on school geography.*—There can be no question that the neglect of geography as a subject for mature study has had and still has an injurious effect upon the condition of geography in the schools. Special emphasis must be given to this point, for it is not generally enough recognized. One may attend a conference of superintendents and teachers before whom geography is a subject for discussion, and hear much said about this or that aspect of the subject, about this or that device for its presentation, and yet hardly a suggestion may be made to the effect that teachers of geography should be better taught, and still less is an intimation offered that geography itself is in need of more mature development as a scientific study. It is not only in our own country that this complacent attitude prevails: three recent articles by representative foreign authors<sup>2</sup> contain practically no indication that geography in the schools still suffers from lack of preparation on the part of the teacher, and from lack of advanced work on the subject in the universities. These deficiencies are less noticeable in continental schools, particularly in Germany, where it is so often the case that a secondary teacher holds the degree of Doctor of Philosophy; but they are certainly serious in Great Britain, where geography in the schools is a very commonplace study, in spite of the enormous importance of geography to the British empire.

7. *Deficiency of higher learning in geography.*—The most conspicuous evil consequences of this state of things is the want of a well-developed body of higher geographical learning with respect to which the geography in the schools shall stand only as a beginning. It is unfair to look to teachers of the supposed elements of a subject

<sup>2</sup> JAMES BRYCE, "Importance of Geography in Education," *Geographical Journal* (London), Vol. XIX, 1902, pp. 301-313. ELISÉE RECLUS, *L'Enseignement de la Géographie*, Publication No. 5, Université Nouvelle, Institut géographique de Bruxelles, 1901. H. FISCHER, "Zur Methodik des erdkundlichen Schulunterrichts," *Zeitschrift der Gesellschaft für Erdkunde* (Berlin), 1902, pp. 112-142.

for the development of its more advanced parts ; school-teachers are fully occupied with duties of their own. The body of higher learning must be developed in geography as it has been in other subjects, namely, by the devoted work of specialists who give their best thought to the advance of their subject. Many specialists in other sciences are professors in colleges or universities, experts in governmental bureaus, or amateurs of high intellectual rank ; but geography is seldom represented in this goodly company, and hence the development of mature geography is slow. Many subjects that make their beginning under the cover of geography outgrow their shelter and attain an independent maturity. Thus astronomy, geology, botany, zoölogy, history, government, and economics, extracts from whose contents are first introduced into school work along with geography, gain places for themselves in college, while geography disappears. It is as if the trunk subject had subdivided, like an elm, into many divergent branches, each of which flourishes alone. I wish the simile might be that of a sturdy pine whose trunk is not sacrificed, however many limbs it gives forth. There can be little question that, as long as geography is not represented in colleges, the future teachers of geography in the schools will be insufficiently educated in their subject. If the power of this society were turned toward bringing about a better recognition of geography in the colleges and universities, a most advantageous reaction upon the schools would be secured. The result would not be immediate ; it might be slow ; but it would be sure.

8. *Deficiency of higher learning discourages high ideals.*—In the absence of a mature development of our subject, its ideals must be of a low order, and its early steps can make only uncertain progress in advancing toward an unknown goal. What would the Latin, the geometry, the physics of our schools be, if those subjects had no representation in the colleges! How definitely the first steps in these subjects lead toward the great body of their higher learning! How greatly would the geography of the schools be improved if geography had as well established a place in our colleges as history has! I will not here take up the question whether geography is entitled to so universal a recognition. Some educators may think it is not, and certainly the existing distribution of appointments in our colleges would confirm that opinion ; but it may be safely maintained that, if a professorship of geography existed in every college where there is a professorship of history, our ideals as to the mature content of geography would be

much enlarged above what they are today, and our conception of what constitutes the elements of the subject would be correspondingly changed. We should at least be cured of the forlorn idea that geography is only the study of the location of things.

One of the most evident results of the immature development of geography is that details rather than principles have been dwelt upon in school work. This is no longer so true as it was twenty years ago, but it is still too true. It is by no means always the fault of the teachers. It may be due in large part to the low ideals indicated in official examination papers, for if examinations are largely directed to testing a knowledge of the innumerable details of geography, then the teacher must cram the pupil, and cramming trains the memory rather than the intelligence. If emphasis is, on the other hand, given both in teaching and in examinations to general principles and important relations, under which items are adduced simply as illustrations, then the intelligence as well as the memory is developed. Items of occurrence and location are not to be neglected, but they should be studied in their natural relations instead of as isolated facts.

This principle is now pretty generally understood. It is agreed that a cape, a river, a boundary, a city, must not be merely located and memorized, and then set aside, unused, unrelated to anything else; for with teaching of this kind the essential spirit of geography remains dormant. Yet such is the popular pressure for a knowledge of the names and places of things that many things are learned merely by place and name. It is usually held to be necessary to go briefly over a large number of items, even if there is no time to learn their relations without slighting other parts of the subject; but this supposed necessity is open to question. It should be carefully considered whether the names that are learned have been chosen with good judgment from among the countless items of geography; whether they are really chosen at all, or simply inherited from a time when geography had not reached its present development; whether their choice is made with due regard to the higher reaches of geography, and not merely in obedience to a poorly educated public sentiment as to the content of our subject; and finally whether items should after all be given so much prominence as they have often had, with the result of subordinating the large principles under which the items stand only as individual examples.

9. *Value of principles versus items, illustrated by geometry and*

*physics*.—A possible rearrangement of the emphasis on items and principles in geography may be illustrated by reference to the actual practice in geometry and physics. No good teacher would approve of memorizing the particular figure of a theorem in geometry, with its individual proportion of parts, its attitude on the blackboard, and its special lettering, as a means of learning the general quality of the theorem that the figure illustrates. It is the generality of the theorem that is impressed; it is the possibility of applying a general principle to any particular case that falls under it that must be emphasized in good teaching. So in physics; as much care as may be properly expended on the construction and manipulation of a piece of apparatus, the emphasis of good teaching must be given to the principle which the apparatus is used to illustrate. I believe it is possible to discover and establish general principles in geography likewise, and to teach individual items chiefly as illustrations of the principles under which they fall.

It must be admitted, however, that geometry and physics are not so closely analogous to geography that the best method of study in the first two is, therefore, the best in the third also. The lettering of a chalk figure on a blackboard and the construction of a piece of simple apparatus have no such importance as an actual village in a valley or as an actual island in the sea. Nevertheless geographers may profit by taking heed of the subordination of item to principle in geometry and physics; they may perhaps be thus aided in perceiving the proper relation of the specific to the general in their own subject.

10. *Examples of excessive detail in the study of counties*.—In illustration of excessive attention to detail let me cite certain official examinations that have sometimes included such questions as: "Name the counties in order along the southern border of this state." Such questions have been defended because it is held to be desirable that every inhabitant of a state should know the counties into which his state is divided; but this assumption is wide open to doubt when it is seen that the counties cannot be learned except by sacrificing something else. It is by no means demonstrated that the time demanded in acquiring this knowledge has been used to the best advantage by the pupil. Very little application is made of the knowledge after it is acquired. It would be interesting to inquire of pupils thus trained whether the list of counties is gladly retained in the memory of mature



years, or willingly forgotten. Surely, if forgotten, the loss does not impair the usefulness of a citizen, since the forgotten items can be easily regained when wanted. There are very few of our most intelligent friends who carry in their memories such items as the names and relative position of all the counties in their home state or in any other state, and it is certainly very rarely the case that any well-educated man or woman regards such use of memory as a measure of a cultivated intelligence. Truly, something about counties may well be taught under political geography, and still better under civics. The subdivision of the larger counties of early settlement into smaller counties as population grows, deserves mention in history; and the unorganized "plantations" still found in the backwoods of Maine may well be cited as examples of retarded development, illustrating today a condition through which other states have long ago passed. But, as a matter of fact, while the division of a state into counties is a matter of practical convenience for various purposes of record and administration, the actual counties into which a state is divided are not worth memorizing in competition with the many more educative problems of geography. If counties were the whole content of geography, we might have to learn them all over the country; but they sink into insignificance in comparison with many other matters in the actual content of our subject. If a sheriff, an express agent, or a postal clerk needs to know the counties of a state (very likely not the state in which he was "raised"), he can learn them at short notice, and the rest of us can get along very well by looking up any particular county in an atlas when we want to know something about it; and, by the way, the habit of looking up things in an atlas is worth the memorized lists of the counties in a dozen states. Indeed, in some respects the subdivision of states into counties is outgrown; notably with regard to county prisons, into which all classes of local malefactors are thrown, unclassified, greatly to the injury of many of them, and hence to the harm of the community. This may have been justifiable when means of transportation did not include railroads; but it endures today in the more closely settled states only as the inheritance of an earlier condition which has not yet changed into appropriate relation to its new environment.

The "tier of counties" question is probably less common now than it used to be; but it serves to illustrate very well a low ideal as to the content of geography on the part of examination boards; the ~~subordination~~

of school work to an uneducated public sentiment that demands of school children a multitude of details, concerning many of which intelligent persons do not regret their ignorance, because their minds are occupied with better things. While the low ideal exists the work of the teacher and the examiner must lead up to it. When the ideal as to the content of geography is raised, school work will rise with it to a higher grade than it now reaches, and then the counties of a state will be counted among the "honorable points of ignorance."

11. *The three stages of geographical development.*—As a means of leading toward higher ideals, let me now attempt to show that geography as a mature subject is capable of a higher development than it has yet reached. In this connection it will be well to review briefly the three stages of development recognizable in the progress of our venerable subject. Until within about a hundred years the content of geography consisted of a body of uncorrelated facts concerning the earth and its inhabitants. The facts were described empirically, and as a rule very imperfectly. Their location was noted, but their correlations were overlooked; it had not indeed been clearly made out that correlations existed. This blindly inductive first stage was followed by a second stage, which was opened by Ritter's exposition of the relationship between the earth and its inhabitants. True, Ritter and his school did not carry the idea of relationship systematically through all parts of the subject; and such relationships as were noted had to be explained on the old doctrine of teleology—the adaptation of the earth to man—instead of on the modern principle of evolution—the adaptation of all the earth's inhabitants to the earth. It is this principle which characterizes the third stage of progress, and along with it goes a principle of almost equal importance; namely, that all the items which enter into the relation between the earth and its inhabitants must be explained as well as described, because explanation aids so powerfully in observing and appreciating the facts of nature. It should be noted that the two great advances by which the third stage of geographical progress is set forward from the second are the contributions of others than geographers; the principle of organic evolution is owed to the biologists; the principles under which explanation is found for the features of the earth are owed chiefly to astronomers, physicists, and geologists. This indebtedness might not have been so heavily contracted if the geographers of the older school had been less content with a purely inductive treatment of their subject; if they had

asked themselves, not only where and what, but also how and why things are as we find them.

12. *The content of modern geography.*— Geography has today entered well upon its third stage of progress. The “causal notion” is generally admitted to be essential in the study of the relation of the earth and its inhabitants. Thus understood, geography involves the knowledge of two great classes of facts; first, all those facts of inorganic environment which enter into relationship with the earth’s inhabitants; second, all those responses by which the inhabitants, from the lowest to the highest, have adjusted themselves to their environment. The first of these classes has long been studied as physical geography, although this name has been used as a cover for many irrelevant topics. In recent years there has been a tendency to compress the name into the single word, “physiography.”\*

The second of the two classes of facts has not yet reached the point of being named, but perhaps it may come to be called ontography. Ecology, to which increasing attention is given by biologists, is closely related to what I here call ontography, yet there is a distinction between the two, in that ecology is concerned largely with the individual organism, while ontography is intended to include all pertinent facts in structure, physiology, individual, and species.

Neither physiography nor ontography alone is geography proper, for geography involves the relation in which the elements of its two components stand to each other. Each of the components must be well developed before geography can be taken up as a mature study.

The relations involved in geography, as thus understood, are of the most varied nature. A relation that has been frequently quoted since Ritter first called attention to it is the one between the irregularity of continental coast lines and the stage of human development; but a continuous series may be made from this large and general relation to such trifling matters as the relation that determines the point where a common road bridges a stream. Evidently, then, it is not the dimensions of the relation that determine its geographical quality, although its dimensions may have much influence in fixing the stage at which it may

\* In Great Britain, “physiography” is used under the authority of the South Kensington examinations as the name for a general study of inorganic nature, ranging from geology to astronomy. In the United States physiography is defined by some as the physical geography of the lands; but the Committee of Ten made it equivalent with modern physical geography, and defines it as the study of the physical environment of man.

be profitably introduced in school work, and the emphasis that is to be given to it there. Oceans, lofty mountain ranges, and deserts are formidable barriers that oppose the migration of plants and animals; but from these great controls over the movement of whole species and races a continuous series of examples might be made, leading down to the control that a hill slope exerts over the direction of a plow furrow.

It is not only to the inorganic parts of the earth that man is related, but to the organic parts as well. It is the scarcity of plant and animal food that limits the human population of deserts, just as it is the aridity of climate that limits the number of desert plants and animals. It is the density of forest growth under equatorial rains that has made some of the savage natives of New Guinea expert canoe-men; the rivers there are more available as highways than the plant-crowded land. The relation of population and industries to the cotton, corn, and wheat crop of the United States is a standard geographical problem. Moreover, while attention was formerly given in largest part to the relation of the earth to man, and while this still seems properly enough to characterize the more elementary stages of geography, a large share of attention in its mature stages must be given to the relation of the earth to all kinds of life, and to the interrelations of all kinds of life in so far as they involve considerations of place and space. Cattle are excluded from certain parts of Africa by the tse-tse fly; this is as good geography as is the relation of the Gaelic and English languages to the highlands and lowlands of Scotland. Man was once looked upon as set apart from the rest of organized beings, but this is no longer possible. The devices that he has employed and the battles that he has fought in gaining his present place resemble more than they differ from those by which all plants and animals have gained their places. Indeed, it is but the commonplace of comparative zoölogy today to see in man a great number of structures and processes that have been inherited from a time when he was not man; and many of these structures and processes are responses to his physical environment.

A science cannot be cut off arbitrarily in the midst of a continuous series of relations that characterize it. Geography must consider the ontography of the lowest beings as well as of the highest. It should therefore be our effort, in giving to geography a mature development, to open our conception of its content as widely as possible, rather than ~~to set narrow~~ limits to it; to probe all the elements of physical environment and all the manifestations of life in order to discover examples

of relations that have thus far been overlooked. Only when geography is thus more fully constituted a mature subject will it be possible to make the best selection of those parts which may be considered elementary; only through the development of the higher reaches of the subject can the lower reaches be best ordered. It is for this reason that these somewhat transcendental considerations deserve the attention of thoughtful and progressive teachers.

13. *The unity of geography.*—It is especially the factor of relationship of earth and inhabitants that characterizes geography as a subject apart from other sciences, and that gives an essential unity of content and discipline to all its varied parts. Objection has been made to geography because of its composite nature; it has been reproached with being only a patchwork of scraps from many other subjects, without any essential quality of its own. These assertions do not seem to me to have force: in the first place because other subjects as well as geography are composite if they are judged only by the things that they study, and by the processes employed in their study; and, in the second place, because geography, properly understood, has as well defined an essence of its own as other subjects have.

It is perfectly true that the geographer, even the young geographer, must learn something of the planets in connection with his study of the earth as a globe, something of the behavior of gases in connection with his study of the atmosphere, something of the history of the earth in connection with his study of land forms, something of the structure of plants and animals in connection with the ontographical half of his subject; but it is no less true, that the astronomer must learn something of the earth as a globe in connection with his study of the planets, the physicist must learn something of the atmosphere in connection with his study of gases, the geologist must learn something of existing land forms in connection with his study of the past history of the earth, the biologist must learn something of the lands and the seas in connection with his studies of plants and animals. One is tempted to say that all things seem to be shared by all sciences, and that each science can be defined only in terms of the relation in which it studies things, rather than in terms of the things that it studies. The geographer learns what he wishes to know about the earth as a globe, even though this chapter of his study may be related to ~~astronomy~~, about the atmosphere, even though he may divide this part of his subject with the physicist; about plants and animals, even if this seems

to be a trespass on biology; and then he strings all the things he has learned on the thread of the relation between earth and life. The unity of consideration thus gained warrants the inclusion of all these things under his subject of study, and it gives us a right to consider the subject of study as a science-unit.

14. *The complexity of geography.*—It should be no reproach to geography that it is concerned with a large variety of things, some of which are treated elsewhere; for the same may be said of all the other sciences. Every material thing that is studied by the geographer is also fit for study by the chemist and the physicist. The chemist may wisely inquire into the nature of the elements and compounds that are found in minerals, plants, and animals. The physicist may advisedly study the physical properties of these things and the forces by which they interact. If the chemist and the physicist study in their laboratories rather than outdoors, this is only because they are more interested in systematic than in regional physics and chemistry; in the establishment of general laws than in the record of individual occurrences. The weathering of a rock surface, the fall of a rock fragment from a cliff, are processes that come under the laws of chemistry and physics; but the chemist and the physicist do not trouble themselves especially about the innumerable repetitions of these processes in nature; they are satisfied with establishing the laws that generalize the processes, and with good reason, as I shall show further on.

It should surely be no reproach to the mature geographical investigator that he must study many kinds of things, and that he must share many subjects with other sciences, for all this is equally true of the geologist and the historian. The geologist must know much of chemistry and of physics, much of geography and of biology; but he strings all his facts on a single thread, the sequence of events in the earth's history, and thus arranged they belong to geology. The historian must know all manner of things in the realms of geography, language, and economics; and he would do well to know something of biology if he would really appreciate many of man's motives; but all the facts that he gathers are to be arranged so as to exhibit the sequence and relationship of events in human progress, and thus arranged they belong to history.

Not only do other sciences resemble geography in gathering their items from many fields of knowledge, but like geography they employ many methods in reaching their results. If geographers must follow

the methods of the astronomer in order to understand the earth as a globe, of the physicist in order to appreciate climatic factors, of the geologist in order to understand land forms, of the biologist in order to apprehend the responses of living beings to their environment, they are neither peculiar nor unfortunate in this breadth of exercise. The astronomer has long had to use mathematics, yet astronomy is not mathematics, and mathematics is not astronomy. In recent years the astronomer has had to learn much of physics and chemistry, yet no one thinks of confusing these well-defined sciences on that account. Changes of color on Mars with his change of seasons suggest that the astronomer will soon have to borrow something from the biologist; so much the better if he does, and we may be sure that both astronomy and biology will thrive under the new régime. The chemist constantly employs the methods of the physicist and the mathematician; like everyone else, he uses language to express his thoughts, although language is the special study of the philologist; and he must follow accurate processes of thought if he would reach good results, even though the processes of thought are the special province of the logician.

In view of these comparisons it does not seem to me that geographers need fear that their subject is so complex as to be in danger of disintegrating, provided they give heed to its integrating essence. Geography is complex, like other sciences; but like other sciences, geography is unified by the continuity of its essential quality through all its varied parts. Possibly geography is the most complex of all sciences: some one science must stand at the head of the list in this respect, but it must therein differ only in degree, not in kind from its fellows; and it is yet to be shown that complexity is not an attractive advantage, instead of a deterring disadvantage.

15. *The limits of the sciences.*—Although one may be at much pains to indicate the limits by which his science is reasonably bounded, it does not follow that he must hold himself too narrowly within these limits. Truly, the astronomer is chiefly concerned with the heavenly bodies; but he is welcome to come down, if he wishes, to things terrestrial, and to define the boundary of Colorado in terms of astronomical quantities; but he might as consistently consider himself responsible for the explanation of plant growth during the season when the sunshine is long and strong. The boundary of Colorado by meridians and parallels is as truly a geographical matter, as truly a response to physical environment, as is the settlement of a colony at a

protected bay head, or the building of a beaver dam in the open valley of a small stream.

The geologist may, if he so desires, supplement his historical account of the formation of the Lake Superior iron ores, of the telluric forces by which the ore bodies were deformed, and of the erosion by which they were laid bare, with a consideration of the modern times of discovery and exploitation; and, in order to impress his students with the richness and magnitude of the ore deposits, he may explain how they have led to the development of great business undertakings; and he is perfectly welcome in thus overrunning the fields of geography, history, economics, metallurgy, and so on. The physicist may exemplify the laws of gases by explaining the heat and dryness of the chinook wind, or he may illustrate the laws of fluids in a discussion of the waves of the sea; but the winds and the waves are none the less elements of geographical environment. The historian is welcome to introduce as much geology and geography as he desires into his account of the promontories and bays of Greece; the wonder is, indeed, that he does not do so more freely than is today habitual; he is certainly warranted in explaining the steam engine, the Bessemer process of making steel, and the various applications of electricity as events of high importance in the progress of the last century and a half; and he is fully justified in giving some account of the principles of organic evolution, because they have so profoundly modified philosophical and religious thought in the last third of a century. Surely, all these things are as pertinent to the history of man as are the revolutions of a more military sort.

It is, however, a significant fact that astronomers do not find time to tell anything about the boundary of Colorado; they are too much occupied with their own affairs to take up geographical problems. Geological text-books have no pages to spare for the history of the development of iron ore mining around Lake Superior; they have indeed hardly pages enough to tell all that is desirable as to the origin of the ores. It is only in the largest volumes of history that space is found for accounts of the inventions that have revolutionized the modern world, although these inventions are quite as pertinent to the subject of history as are the tactics of a general on a battlefield. As a matter of fact, such subjects as astronomy, geology, and history are so rich in materials and so well organized in methods that they are seldom tempted to run over other fields than their own; and it is to



this condition of abundant material and well-organized method that I hope to see geography advance. The geographer may, if he wishes, tell about the individual features of other planets than the earth ; but there is so much to say about the earth as a globe that everything about the other planets must be excluded that does not aid the study of our own planet. He may turn back from the present to the past, and describe the results of many geological discoveries ; but it is unwise to do so unless these discoveries bear immediately on present geographical conditions. He may feel tempted to explain the principles of systematic botany and zoölogy, and to enlarge upon the facts of history ; but in so far as these excursions lead him into fields that are outside of geographical relationships, he had better avoid them ; not because such excursions are uninteresting or unprofitable in themselves, but because they take time that can ill be spared from geographical duties. I hope to see the teacher of geography spend his time as carefully as the teacher of geometry or of chemistry does. Let him, by all means, enrich his subject by introducing all manner of pertinent illustrations ; let him show an intimate acquaintance with, and a warm sympathy for all the sciences, but let him be jealous of unwarranted infringements upon the hours allotted to his own science, and earnest in preserving its integrity. Under such a teacher no student will complain that the content of geography is so complex and its methods are so diverse that it has neither unity nor discipline.

16. *Systematic and regional geography.*—The attention given to general principles and to specific items differs greatly in the different sciences. One reason for this is that some sciences are concerned chiefly with the abstract relations or the general properties of things, while others are more concerned with the things themselves. Another reason is that in some sciences a principle or a category of phenomena may be exemplified by a great number of instances, and here a large share of attention is given to the general principles under which the instances may be grouped ; while in others the number of illustrative instances is small, and here attention is given chiefly to individual things.

Geometry and algebra are not concerned with things at all, but only with the relation of the forms and the quantities of things. Their methods are characteristically abstract, mental, deductive, and their resort to diagrams and equations is only as an aid to the memory. All their demonstrations could be performed with the eyes shut, in the

dark, if memory sufficed to follow the necessary operations through the successive steps that lead to the result. Specific instances, as in diagrams and equations, are of value only as illustrations of general principles, as has already been stated. Geometry and algebra are therefore systematic and universal, instead of being local or regional; they have no necessary association with any special place or time.

Physics and chemistry deal with the properties and relations of matter; they necessarily study individual specimens of matter, but this is in order to gain results of general application. They adduce specific instances as examples of general principles; but no one would think of attempting to teach the physics and chemistry of Minnesota, for example, although Minnesota is full of matter and energy; there is not enough of local quality to make the physics and chemistry of a state worth considering apart from the physics and chemistry of the world.

Zoölogy and botany are concerned with things; yet the effort of the zoölogist and botanist is to generalize, both as to the form and growth of the individual and as to the development of the race or species. Thus systematic zoölogy and systematic botany (meaning by these phrases not merely the study of classification, but also of individual growth and of racial development as far as they are generalized) attain a high importance. On the other hand, the individual and the grouping of individuals attract attention, because plants and animals are not uniformly spread over the world. Regional zoölogy and regional botany thus gain an importance that has no likeness in mathematics, physics, or chemistry.

Astronomy is largely specific, particularly so with regard to bodies like planets, of which but few examples are known; yet classification and the establishment of general principles are attempted whenever possible, as, for example, in the grouping together of stars according to their proper motion, their parallax or their spectrum; or in the demonstration that the planets move around the sun in ellipses. The long duration and the systematic movements of most of the things studied in astronomy give the individuals a greater importance than is attained by biological individuals; for the extremely small size, the brief existence, and the unpursuable movements of many organic forms turn attention from the individual to the species. When we come to geography, its traditional treatment is found to be very largely specific, as has been already indicated. The establishment of categories, under

which related phenomena are brought together, is seen in the use of such elementary terms as "river," "coast," "harbor," "city," and so on; but the well-recognized categories are few in number compared to those established in botany and zoölogy; and many of the categories are of so general a nature that they do not suffice to indicate clearly the characteristic features of the things that are brought under them. Moreover, it is so common to give a large share of attention, as has already been pointed out, to such items as name and location, that many a pupil must fail to appreciate the general relations of the examples that he studies. In a word, systematic geography is very poorly developed, while specific or regional geography is overgrown and misshapen. This is as if the botanist gave little attention to the kinds of plants that grow on the earth, and devoted most of his attention to the place of occurrence of his vaguely defined genera.

I therefore invite special attention to the need of developing, as maturely as possible, the systematic side of geography, as one of the means of most effectively improving the condition of geography in the schools.

17. *Systematic geography* is concerned with the kinds of relationships that exist between the earth and its inhabitants. The actual relationships are countless; the different kinds of relationships are very numerous, although less numerous than the relationships themselves. The number of kinds is so great that it is highly desirable to arrange them according to some scheme of classification, so that similar kinds of relationships may be brought into near association with one another, while unlike relationships may be set farther apart. It thus becomes essential to analyze the relations into the elements that are related, and to divide these elements into as many categories as may be needful, and then to classify these categories. By no other method can confusion be avoided in a subject so large as that with which we are concerned. I therefore propose to outline here some of the chief systematic divisions of the two parts of our subject, and to point out in particular certain divisions whose systematic arrangement is not yet generally agreed upon.

18. *Systematic physiography*.—The four chief divisions of physiography are the earth as a globe, the atmosphere, the oceans, and the lands; but the content and the order of presentation of these divisions varies in different books, and a fifth division, the distribution of plant and animals, is added by some writers. This addition may be defended

on various grounds in elementary study; but it is always open to the serious objection that it involves an essentially regional treatment, and that it therefore belongs with the regional study of the continents and their physical subdivisions, rather than with the general study of the categories into which the physical features of the earth are divided. It remains to be determined by experiment whether it would not be more useful to limit the proposed fifth division to a systematic consideration of the physiographic factors by which the distribution of plants and animals is controlled, and to place the study of organisms, in so far as it is geographical, under ontography or under regional geography.

Further subdivision of systematic physiography varies greatly with different authors, as may be illustrated by a brief consideration of the treatment of the lands. The older writers gave, as a rule, insufficient attention to this division of the subject, but this defect is now in process of rapid correction. Yet, although the different kinds of land forms are gaining an increasing attention in the newer text-books, the plan of subdivision of this large and important heading is not yet agreed upon. I venture, therefore, to offer for consideration the following outline of a scheme for its mature treatment:

1. The general features of the lands as contrasted with those of the atmosphere, the ocean, and the ocean bottom. The weathering and washing of the land surface and the attack of the sea on the land border result in slow changes of form. Branching valley systems, draining to the sea, are the most characteristic signs of these changes. The long continuation of the destructive changes must result in the reduction of any land surface, however high and uneven at first, to a low, featureless plain, close to sea level; and every example of land form must stand somewhere in the cycle of systematic changes which end in the plain of degradation.

2. The lands may be more specifically treated under three headings: (a) land forms of various structures, and in various stages of the process of sculpture; (b) streams by which the sculpture is controlled, here including glaciers as a climatic variant of water streams (winds, active in desert regions, have already been treated under the atmosphere; waves and currents, active along the land margin, have been treated under the ocean); (c) land waste on its way to the sea. These three headings are to be further subdivided as follows:

(a) Land forms should be subdivided first as to structure, and

second as to stage of development in the cycle of sculpture. The simplest structures should be considered first, and of these coastal plains may well lead the list, while mountains of greatly disordered structure come near its close. Under each of these categories young forms, that is, forms in an early stage of the cycle of sculpture, should be treated first; then mature forms; finally old forms.

(b) Although rivers and valleys have been briefly considered in the introductory account of the lands in general, and although they have been encountered repeatedly in the accounts of the different kinds of land forms, a special subdivision may be well made for their fuller consideration. Here rivers and their valleys form the leading topic, the argument by which the subject is entered; and as such they may be presented in much greater detail than was appropriate when they were only secondary topics, as under land forms.

(c) The forms assumed by the waste of the land on the way to the sea merit recognition; they are fully worthy of an independent place in the scheme of treatment in relatively advanced study, although for more elementary work the topics of this subdivision may be distributed under others.

3. The consequences of special climatic conditions, dry and cold, deserve treatment apart from the consequences of normal climatic conditions; here deserts and glaciated areas may be placed. Any kind of a land form in any stage of sculpture may be now, or may have been recently, arid or glaciated; hence this chapter must follow those which discuss the sculpture of land forms in a normal climate.

4. The shore-line is best given a final chapter to itself, so that all kinds of land forms may be known when the work of the sea upon the lands is taken up. Shore lines should be classified first according to their original outline as determined by the kind of land form on which the sea came to lie when the present relative position of land and sea was assumed; and second according to the advance in the systematic changes that are produced by the action of the sea on the original outline.

19. *Principles of systematic physiography.*—There are several principles of importance to be observed in the treatment of systematic physiography.

The number of categories into which physiographic items are divided should be, as has already been suggested, greatly increased over the usual limit, and the categories should be treated as idealized

types as far as possible. Each category should be illustrated, if possible, by a type diagram, on which the essential features are clearly presented, and from which the unessential details are carefully omitted. Then, in order to connect the ideal with the actual, good examples of the various types should be instanced, the examples being selected chiefly from the home country, but without undue neglect of the rest of the world.

The various categories of the subject must receive explanation as well as description, because of the great aid that comes to the memory through the understanding, and because of the higher order of intelligence that is developed by a rational instead of an empirical consideration of things. Explanation has long been accorded to the phenomena of the atmosphere and of the ocean; it should be applied with equal care to the forms of the land. For this purpose it is necessary to accept in a more whole-souled manner than is customary among geographers the processes of deformation and erosion by which the lands are given their observed forms. It does not suffice to stop at small illustrations, such as sand dunes and gorges; the value of uplift in producing coastal plains, of deformation in producing block mountains, and of erosion in carving the uplifted forms, must be more fully recognized. It is chiefly by the adoption of this principle that the progress of recent years has been made.

It should be observed that, with the explanatory treatment, there comes a good share of deductive consideration, hitherto not consciously recognized as a part of the mental equipment of the geographer in his study of the lands. Although inference and deduction have been abundantly exercised in explaining the winds and the tides, it seems to have been thought that deduction had no place in the treatment of land forms. It may, however, be safely affirmed that, as a matter of good practice, deduction enters largely into any serious attempt at giving systematic explanation to plains and plateaus, mountains and volcanoes, rivers, valleys, and shore lines. This phase of physiographic study deserves careful consideration by those who wish to make the most of the newer methods.

Every category of physiographic elements should be accompanied by examples of the responses made to it by organic forms. It is not enough to take up the organic responses afterward; the habit must be formed of associating these responses with the study of the environing elements. It is too often the case that physiographic features are treated independently, as if they had no connection with the organic

world, even when such connection may be easily found. Such treatment does little toward the formation of the habit of bringing the two halves of geography into their natural relations. The usual treatment of the earth as a globe under the title of mathematical geography gives good illustration of unrelated physiography. It should always be pointed out, in studying this division of the subject, that the wide distribution of organic species is an immediate consequence of the globular form of the earth; for only a globular earth can have its surface so generally level as to permit organic migration over large areas. The restraining effect of mountain ranges as barriers should suffice to show how greatly the facility of movement from place to place over most parts of the earth is dependent on the surface of the globe being not far from level, when considered as a whole. Examples of organic consequences thus related to physiographic controls are the very life of the subject.

Finally, the various categories of physiographic elements should be arranged according to a reasonable system. The elements coexist in nature, but in our study of them their consideration must be linear, one after the other. There is today no generally accepted order of arrangement. For example, the School of Geography of the University of Oxford offers a long vacation course for the summer of 1902, including a series of lectures on "Types of Land Forms and Their Distribution," under which the following headings are announced: "Tablelands, Young Folded Mountains, Denudation Highlands, Plains, and Coastal Regions." Again, a committee of the New York State Science Teachers' Association has lately submitted a report in which shore lines follow the ocean and precede the lands. Evidently discussion is needed on this problem of arrangement in order to bring about some approach to a consistent system. Hence even so subordinate a matter as that of arrangement calls for more serious consideration by mature students than it has yet received.

20. *Regional physiography.*—The physiographic description of a limited region cannot be profitably undertaken until after systematic physiography has been well developed. It is true that the whole content of physiography consists of items gathered from definite localities, and that the parts must be known before the whole; but it is equally true that no well-ordered account of any region can be given until the given facts gathered from many parts of the world have been thoroughly discussed and systematized.

The regional account of Minnesota, for example, involves the position of Minnesota on the globe, and the place of Minnesota with respect to the general system of atmospheric movements, and thus draws something from the first and second divisions of systematic physiography, as above stated. It involves the existence of the state as part of a large land mass, and thus draws something from the general features of the large land masses; and with this goes the effect of a central continental position on climatic conditions. The further account of the state involves the description of all the different kinds of land forms within its borders; if these items are to be presented with best effect, they must follow an order that indicates their general relations, and this draws largely from the systematic study of land forms. It may therefore be urged that the mature development of systematic physiography will do much to advance the mature understanding of regional physiography, and that a student who has carried his systematic studies as far as the condition of the science allows, will make excellent progress when he turns his attention to the study of a limited area. There are, however, very few monographs by which the truth of this contention can be supported; there are, as yet, very few works in which the physiography of a region has been maturely studied in view of a well-developed scheme of systematic physiography.

21. *Relation of systematic and regional physiography.*—The older books on physical geography frequently contained chapters on the several continents, in which the attempt was made to present the actual distribution of the different kinds of physical features that had been briefly explained on earlier pages. The tendency today is to replace the pages formerly allowed to regional description with an extension of the pages allotted to systematic description, for the reason that no sufficient knowledge of the many kinds of things treated in physical geography can be gained if the actual distribution of the many kinds of things over the world is attempted. The increased attention thus given to systematic study is certainly an advantage, and, if the idealized types of systematic study are illustrated by a good number of actual examples from many parts of the world, the student will have no ground of complaint. It is as much a mistake to attempt regional physical geography in the year that is granted to this subject in the high school as it would be to teach the flora or the fauna of various countries in the year that is allotted to botany or zoölogy. All the trend of the newer teaching in the biological sciences is in the direction of a more



appreciative knowledge of typical forms, studied in view of their relations to large problems of growth, classification, and evolution. School study of the distribution of plants and animals is in danger of deteriorating to a mere study of names, and the same is true of regional physical geography. If the description of the continents is attempted in the year that is given to physiography in the high school, the time given to systematic physiography must be very insufficient, and the regional description must therefore be very defective.

There are, however, certain divisions of systematic physiography in which what seems at first to be areal or regional study is advisable; namely, the chapters on the atmosphere and the ocean. The reason for this may be easily seen. The greater features of temperature distribution, atmospheric circulation, rainfall, and climate are really parts of a physiographic phenomenon whose dimensions are as large as the earth. Like the earth itself, the atmospheric shell as a whole must be considered if we wish to acquire an understanding of the relations of its parts. We have but one atmospheric shell with which to deal, and hence the study of its parts, such as the trade winds, the subtropical belts, and so on, becomes specific and to that extent regional. In the study of rivers, on the other hand, there are many examples to illustrate the relations of the various parts—basin, divides, valleys, streams, flood plains, deltas, etc.—and here the treatment necessarily becomes general, with allusion to specific examples only as a means of illustrating general principles.

The atmosphere is not, however, treated wholly by the regional method; for like the parts of rivers which have small dimensions relative to the earth on which they occur, there are in the atmosphere also certain smaller phenomena of frequently repeated occurrence in place or time: these are always given a general instead of a regional treatment, and specific examples from particular regions are cited only as illustrations of the categories under which they fall. Land and sea breezes, mountain and valley winds, thunderstorms and tornadoes are examples of these smaller phenomena: no text-book attempts to describe them all.

It is the same with the ocean. As a continuous and remarkably uniform sheet of water, the actual ocean may be treated as a physiographic unit. Variety in composition, temperature, and movement is limited for the most part to its surface portion; and even here the distribution of temperature and the arrangement of the larger currents

are essentially symmetrical with respect to the equator, as if they were but parts of a large terrestrial phenomenon. When it comes to minor features like local currents, mention can be given to only a few typical examples, such as are afforded by the backset eddies between the Gulf stream and the Carolina coast, by which the cusped capes of that interesting shore line are determined. So with the tides: the unity of this terrestrial phenomenon and its relation to the moon and sun should be pointed out and explained; but the infinite variety of tidal details along the ocean shores can be taught only by means of type examples, each of which is chosen to illustrate a class of tidal movements.

Something of regional treatment may be given to the first subdivision of the chapter on the lands, for the larger continental masses are so few that they naturally take our attention individually as the individual planets take the attention of astronomers. On the other hand, the plan of continental structure and relief is so intricate that it is not yet well resolved even by the most advanced students; hence systematic physiography cannot dwell long on the large divisions of the lands. The continents are best studied under regional physiography.

22. *Systematic ontography*.—We may bring from the systematic study of physiography the conviction that a carefully arranged classification is worth the labor that its preparation has cost. The possession of a scheme of classification fosters the habit of referring newly found items to their proper place among their fellows. Items thus properly placed become much more valuable as elements of a well co-ordinated series than when arranged empirically, as, for example, in the order of acquisition. Let us, then, take up ontography with the intention first of seeking out all manner of individual examples of responses made by organisms to their environment, and then of arranging the examples in a logical order with respect to certain general principles. Thus arranged, similar items are soon generalized into categories, each one of which is described as a type, rationally explained in relation to the factor of physical environment that has produced it, and illustrated by specific examples. There can be little question that the subject will grow rapidly if it is thus cultivated.

It is to be noted that the classification here proposed deals with organic responses as effects, and that the physiographic causes therefore enter only secondarily. In systematic physiography, it was the

causes or controls that were classified, and the organic effects came in secondarily. Thus the threads of physiography and ontography run different ways; they are the warp and the woof whose close interweaving shows us the plexus of relationships that constitute the content of geography proper. On whichever series of considerations one may begin, he will be led over the whole subject if he follows the series to its end.

The chief writer on what I am here calling ontography is Ratzel, who has given an elaborate discussion of human conditions in relation to their surroundings in his *Anthropogeographie*. The subject deserves an even more general and more systematic treatment than it there receives. This is not the place to set forth its many divisions, but I may be permitted to indicate briefly some of the more striking ones.

Every organic species may be considered as possessing certain structures, as carrying on certain habitual life processes, and as occupying certain habitats. Many of the structures, processes, and habitats are responses to physiographic causes; as such they enter into the content of ontography and indicate its three chief divisions. The light bones and feathers of flying birds are a response to their flight through the unsustaining air. The torpidity of many animals during winter is a response to climatic conditions. The division of a genus into several similar species on the different islands of an archipelago, as in the remarkable case of the cassowaries, is the response to the production of the islands by the partial submergence of a once continuous area. Numberless instances of these kinds might be cited.

Each of the three divisions of ontographic responses is of two kinds; the responses of one kind are brought down as inheritances from beginnings in an earlier time, maintained today because their physiographic controls are persistent; these are the more numerous (except, perhaps, as regards habitat). The responses of the other kind are of recent development, and are therefore the more immediate material of ontography. Those of the first kind are, however, only less directly pertinent to ontography, for they are the responses to the palæogeographies of geological time, and can be cut off from those of today only by an arbitrary separation.

The most important inherited responses are those determined by long persistent conditions of environment, such as are common to the physiographies of all ages. The habit of breathing oxygen, for example, universal among plants and animals, may be reasonably

regarded as a response to the widespread occurrence of this gas, uncombined, but active in entering into combination with organic substances, whether it is dissolved in the ocean or free in the atmosphere. A great number of animals have a dorsal and a ventral portion, and an arrangement of skeleton and muscles with respect to the vertical line of gravitative force. This is evidently the result of living on an earth whose mass greatly exceeds that of the organism. Escape from responsibility to omnipresent gravity is possible only for those forms whose density equals that of the medium in which they live, as with many marine animals, or whose minuteness makes them the play of every passing breeze, as with innumerable microscopic organisms.

The difference of coloring of the ventral and dorsal surfaces is the response to the external source of the light by which the earth's surface is illuminated. The downward growth of plant roots and the upward growth of stems seem to be responses both to light and to gravity. All organs of sight, voice, and hearing appear to be responses to physical properties of environing media. The development of these organs has been slow, but, once developed, their profit has been so great that they have been persistently inherited wherever the conditions under which they were developed have endured. Sight is the means of taking notice of the bundle of strongest solar radiations directly incident upon or reflected to the organism; it is given up after being once acquired only by cavern animals living in total darkness. With the development of sight on the part of pursuers, there seems to have come the device of invisibility on the part of some of the pursued, as with those transparent marine organisms that so perfectly imitate the invisibility of the water in which they float. Hearing is the device for taking note of the air or water waves that are excited by some neighboring disturbance. Voice is rarer than hearing, and seems to be especially associated with the organs for air-breathing in the higher vertebrates.

The list of responses of this kind, stated in association with their causes, would be very long before it was complete. There is today, unhappily, no place where the list is to be found on record. All the examples of responses given above may be connected by a continuous series of other examples with the most modern and commonplace illustrations of geographical relationships. It is only under the most arbitrary ruling that the immediate, simple, and manifest responses are considered pertinent to geography, while the remote, complex, and

obscure responses are referred to some other science or neglected altogether. The resort to talus crevices for shelter by beasts, and to overhanging ledges by man; the use of mud by wasps, of twigs by birds, of wood, stone, or ice by man in building shelters; the housing of colonies of bank-swallows in sand banks and of communities of Chinese in loess bluffs; the settlement of beavers on watercourses, of men at fords and harbor heads; the gathering of a manufacturing population about the water-power of modern Niagara; all these are examples of the ontographical habit that organized beings have of taking advantage of their surroundings. All the content of economic or commercial geography, whose modern development is of so promising an interest, is but a manifestation of a special phase of this universal habit. It is of course desirable to select the simple, the manifest, or the "important" for exposition in elementary teaching; but the mature geographer can be satisfied with no such arbitrary bounds for his study.

The location of roads between neighboring villages on a plain, of highways over passes, of tunnels through mountains, of ship channels in harbors, offer many examples of responses to physiographic controls. The course of the paths beaten down by wild animals in the jungle, of the trails worn by cattle on their way to the rare watering places of arid regions, of the lanes followed by pillaging ants, offer equally good, although less conspicuous, examples of the same kind. The fleetness, the endurance, the venom, of the animals of arid deserts have been instanced as striking examples of responses to an environment where the maintenance of life is difficult. The spirit of independence characteristic of the Swiss has been regarded by one writer as the cause of the maintenance of independent organization even in very small village communities; but it has lately been shown by Lugeon that the physiographic conditions inherent in valleys among lofty mountains are such that only small villages can be developed; and thus interpreted the spirit of independence must be regarded as the result of the ontographic subdivision of Swiss settlements into small villages. The growth and distribution of plants of different kinds, as influenced by rocky surfaces, composition of soil, depth and abundance of ground water—problems of modern ecology—are all of as strictly a geographical nature as is the distribution of human populations, and all may be treated systematically or regionally.

Ontography should be pursued even into forms of language and habits of thought. It is well known that mountaineers have a greater

number of terms for peaks, ridges, and passes than are to be found among the inhabitants of plains; that dwellers in the deserts find need of giving different names to various kinds of sand dunes, while the people of a moister climate get along very well with only one. "The river of life" and "the valley of the shadow of death" are figures of a manifestly geographical origin, while "amount," "insulate," and "isolate" involve somewhat concealed geographical figures; but the origin of "rival," "derive," and "arrive" in a geographical root would be hardly noticed by anyone but a philologist, yet these words certainly serve to show the importance that has long been given to the shore line that divides land and water. In how many other ways language is ontographical, no one has yet learned. Fewkes has shown how largely the religious ceremonial of certain Indian tribes of the arid Southwest is based on climatic conditions; thunder clouds and lightning flashes are conventionalized in religious decoration. We are perhaps prepared to ascribe the simple religions of pagan savages in greater or less degree to physiographic sources; but it seldom occurs to us that the position and the character of the heaven and the hell that are so closely bound up with the faith of many a Christian are of an equally physiographical origin. The ontographical half of geography will have abundant material when it is taken up for serious study by mature students.

The content and treatment of courses on regional ontography can be inferred from what precedes; they cannot be detailed here, for lack of space, but they would include all that is commonly understood by political and commercial (economic) geography, along with a greater emphasis on the relation of these effects to their causes than is commonly allowed.

23. *Systematic and regional geography*.—Systematic geography is the orderly study of the relations between all the categories of physiography and ontography. Regional geography is the orderly study of all these relations that are manifested in a limited area. It would be premature to attempt now to state the order in which the categories of geography, thus understood, should be taken up. That is a matter which may well engage the attention of mature geographers for some time to come without exhausting the discussion that it deserves. My object in devoting a paragraph to the heading above is to reiterate the necessity of carrying forward mature geographical study toward the goal here indicated, as a practical means of improving the condition of geography in the schools. The elements of the subject, most fit for

presentation in the schools, cannot be determined until the subject, as a whole, is more thoroughly discussed than it is today; and the presentation of the elements cannot be of the best while the teachers, as a rule, have a knowledge of the subject that is as far below the capacity of their years as is now generally the case.

24. *Relation of mature geography to school geography.*—I have made free in the foregoing pages to consider the higher reaches of geographical study, because it seems to me otherwise impossible to make wise plans for the lower reaches; but, in order that this paper shall not be concerned too largely with questions that may seem almost transcendental, it may close with what may be popularly called a few “practical suggestions,” though, for my own part, I believe that all the suggestions here made have a practical bearing on school teaching.

25. *Better preparation of teachers.*—One of the most direct results that would follow from the more general pursuit of geography as a mature study would be the improvement in the preparation of teachers. This is an improvement that is, according to my experience, sadly needed. The acquaintance that I have made during a number of sessions of the Harvard summer course in geography has convinced me that teachers of geography are by no means informed up to their capacity even concerning the elementary aspects of their subject. The idea that most bays are merely drowned valleys is a surprise to many teachers; the idea that a river which exhibits the “normal” sequence of parts usually described is a mature river, and that young and old rivers must normally have a different arrangement of parts, is a novelty to them. The widespread distribution of species and the extended development of commerce have seldom been considered rationally as the responses to the opportunities for movement offered by a globular earth. The division of mankind into races has been usually treated empirically, instead of as primarily a response to the continental division of the lands, and secondarily to important mountain and desert barriers. There is no lack of a conscientious desire nor of a capacity to learn; but the conclusion has been forced upon me that many of the teachers whom I have met have been intellectually half-starved in their previous study of geography; and yet the teachers to whom I refer may be fairly considered as of better than average quality, for the very reason that they have spent their summer vacations in trying to make themselves better still. It is not necessary to inquire here into the causes of their deficient training, but the

remedy of the deficiency may be looked for with much confidence in the elevation of the general status of geographical study that would accompany its habitual treatment by specialists in colleges and universities. It is important to emphasize in this connection the need of a broader and higher preparation for teachers, so that they may know a good deal more than they have to teach, and thus gain the easy mind that characterizes the proficient expert. The recognition of geography by colleges and universities will, I believe, do more than anything else to realize this desirable end. The individual teachers who may read this paragraph will not be able alone to exert much pressure toward a change to a better order of things in this respect; but the organized body of teachers and superintendents that constitutes the National Educational Association can do much in this direction, if they are once fully persuaded of the need of doing it.

26. *Better equipment of geographical laboratories.*—It is not so very long ago that physical and chemical laboratories were unknown even in the best secondary schools. The rapid development of observational and experimental teaching in these subjects makes me hope that the time may not be long distant when the best high schools will, as a matter of course, be provided with a room that may properly be called a geographical laboratory, and that this room will contain a good working collection of material for the observational study of geographical problems. Some such laboratories already exist. As strong an organization as that of the New York State Science Teachers Association has favorably considered the appointment of a committee to prepare a report upon the proper equipment of a geographical laboratory; and a collection of materials for geographical teaching has lately been exhibited in Iowa. All this may fairly be taken as a hopeful sign of the times. When the grammar schools take up the idea of practical work in geography, the matter of laboratory equipment will become of so large commercial importance that publishers will enter the field; and the walls, racks, and tables of the school-room will not be so bare as they are today. But it is evident that the better preparation of teachers must precede the fuller equipment of laboratories, and that the teachers must have become familiar in their own training with the use of abundant laboratory materials, such as should be found in institutions of higher learning, but such as are today too generally wanting even there. Among the materials most needed are wall maps, not merely of climatic elements, of oceans, and



of continents, but of typical features of continents also ; good pictures and maps of the actual examples by which type forms are illustrated, models of land forms, lantern slides in large variety, well-selected series of weather maps, plentiful large scale topographical maps such as are published by our various governmental bureaus, and so on. Those who are known to have gathered together a laboratory equipment of this kind are frequently in receipt of letters from superintendents and teachers, asking how the collection may be duplicated ; and the letters are difficult to answer, because the collections have been brought together piecemeal. But it is a hopeful sign that dealers in lantern slides are getting out catalogues of subjects especially selected for the illustration of physical geography ; and the coming decade will undoubtedly see further progress in this line. Yet here again it will only be a repetition of the experience in physics and chemistry, in botany and zoölogy, if the laboratory equipment for teaching geography in schools is largely developed in the more fully furnished laboratories of our colleges.

27. *Replacement of items by generalities.*—The hopeful progress that school geography has made in the last twenty years is characterized largely by a diminution in the number of isolated empirical items to be committed to memory, and by a corresponding increase in the number of principles and generalizations to be intelligently studied. There is no reason for thinking that this progress has reached its limit ; there is, on the other hand, much ground for believing that, as the teachers and the teachers of teachers of geography gain a larger and broader understanding of the subject in its mature development, the replacement of the lonesome empirical item by the rational category, under which the items are grouped in good fellowship, will continue to increase beyond its present moderate measure. Items must still be presented in abundance, for young pupils need plenty of specific information ; but the items should be introduced in illustration of the categories to which they belong, rather than as sufficient unto themselves. In the earlier years of school study, the items ought to precede the category and the generalization, for first progress must be largely inductive ; but, by the time that the high school is reached, and probably for a year or two sooner, deduction may be used to a significant extent ; that is, the generality may be presented first, and the items may then follow as deductions from it, instead of preceding as elements of its induction. Many teachers are already using the deductive method in teaching the

distribution of wet and dry regions as determined by the relation of mountain ranges to the terrestrial wind system ; and the success of the method there testifies to the success that may be expected in other cases where the mental processes involved are of a simple and safe order. This matter deserves more emphasis and amplification than I can give it here ; suffice it to say that geography will become more and more a scientific study in proportion to the use that is made of the fully developed scientific method, which always involves deduction along with induction in treating problems where any of the essential facts are unseen.

As geography becomes rational, the purely *memoriter* method will hold lower and lower rank in its lessons. Such a topic as state capitals, learned in old-fashioned days as a monotonous recitation, may be enlivened by an enlarged treatment in which many other facts than mere name are associated with the capital city. Many of these peripheral facts may be forgotten, but the central fact will remain more firmly fastened in the memory than if it had but one empirical attachment. So with state boundaries ; the mere recitation of boundaries, apart from the geographical relations of the boundaries, is dull work ; dull in the book, dull in the teacher, dulling in the pupil. Instead of having such matters learned as mere feats of unreasoning, unassociated memory, they should always be combined in a rational way with other things, so as to make for intelligence, and to develop in the pupil the habit of looking for the meaning of things, instead of dulling or even repressing that excellent habit. When rivers are taught only by name and place, it must be that little more is said about them in the text-book and known about them by the teacher. It is very questionable whether it is worth while to use any share of school hours in learning so slender a geographical item as the mere name of a river. It would be much better to omit altogether the account of a country that is thus treated in earlier school years, and to take it up for the first time when its general geography is treated in such a manner that mountains, climate, rivers, products, and cities are properly associated. It is well known that the best schools are making excellent progress in such lines as these ; but it is not yet time to flatter ourselves that pressure toward such progress is unnecessary.

28. *Geographical facts must be made more real.* — I recall the true story of a little girl learning her lesson in a question-and-answer geography. *Ques.* "Do the stars shine by day as well as by night?"

*Ans.* "They do." The little victim was seen rocking herself to and fro, as if to give even a muscular aid to her memory, and repeating, "They do, they do, they do — they do, they do, they do." The theory of teaching has far outgrown such absurdities, but the practice has not, and we must continue to protest against them. I have in my own experience seen members of a class of teachers try to answer the question: "Why are the days longer than the nights in summer?" by recalling the words from some printed page instead of by attempting to visualize the plain facts of nature. The moral of this is that the facts of geography must be made more real than they can be by studying only the words of a book. All sorts of observational devices must be summoned to the aid of the printed page. The importance of this principle will be more fully realized when it is recalled that children can know much more than they can say; that their power of observation is far greater than that of expression; and that equality of these two powers is not always reached even in mature minds. In order, therefore, that the little that young pupils can say about geography should be properly proportioned to their whole mental acquaintance with the subject, they should be provided with material, especially with material for observation, in much larger quantity than they are expected to recite, and in much more realistic form than mere names and definitions of unknown things.

Yet such is our servitude to conventional methods that we constantly fail to teach by things; the teaching by words is so much easier. Consider, for example, the rotation of the earth. What is simpler than to observe in an effective manner the elementary facts upon which this extraordinary conclusion is based, and yet how few school children ever learn these facts by well directed observation before they learn the verbal statement of the conclusion printed in a text-book. There is no inherent difficulty in having the necessary observations made by school children at different hours during a two-session school day; particularly that most significant observation, that on the second day the sun can be seen to approach from the eastern side of the sky the position that it had in the sky twenty-four hours before. Again, with latitude, in how many schools of our country are the necessary facts taught by observation before the terms are introduced, and definitions are memorized? Yet here induction is surely the safe and sound method. I am convinced that the vagueness of popular understanding about things of this kind comes from an over-emphasis of verbal defi-

nitions in school years, while facts easily observed are under-emphasized. It would be well to replace the names, diameters, and distances of the planets—matters of small geographical import in any case—with the observational proof that there are planets—other earths—to be seen in the sky, and that young observers can easily follow them among the stars. All these errors of method would be reduced or excluded if the teacher were perfectly easy minded on such problems; and the easy mind is best gained through practical acquaintance with observational methods such as should characterize the more mature stages of geographical study.

Geography indoors should be as largely as possible supplemented by outdoor observations by the pupils; yet I have found a great diffidence among teachers as to outdoor observation, even on their own part. They may have learned very well indeed everything that a book has to say about the origin of valleys; they may profess belief in the destructive work of the streams that flow through the valleys; yet, when it comes to taking a class of children outdoors and using the examples of geographical forms, such as the neighborhood affords, there is too often an undue hesitation. The teacher's lack of self-confidence would be greatly diminished if her own school work had been more liberally guided, and if her days of professional preparation had been spent in the consideration of a decidedly more mature phase of geography than that on which her skill is afterward to be exercised.

29. *Laboratory exercises must be specific.*—With an increasing realization of geographical facts will come an increasing accuracy and definiteness of knowledge about them; and this will be a great advance, for at present geographical ideas are apt to be hazy. My recent experience with Harvard admission examinations in physiography leads me to fear that pupils in secondary schools do not look upon this division of geography as capable of clear statement, such as they know is expected in Latin and geometry. The answers to such a question as, "Describe and show by diagrams the development of a valley and its flood plain from a young to a mature stage," indicate too often a vagueness of understanding that is extremely disappointing, the more so in that it reflects imperfect methods of teaching as well as of learning. The correction of this difficulty is not to be secured by insisting on precise verbal recitations from the text-book, any more than similar difficulties in geometry would be overcome by insisting on verbatim recitation of theorems. The needed reform will be

found in realistic exercises in geography corresponding to blackboard demonstrations and graphic constructions in geometry. But it is essential that the realistic exercises in the geographical laboratory should be carefully planned, in order that they should be closely pertinent to and illustrative of the text, and that they should call for accurate thinking and performance on the part of the pupil. The elaboration of a series of fifty or more such exercises in physiography is greatly needed; and those who have experience in work of this kind should be encouraged to give specific account of their methods in some of our educational journals, or, better yet, to prepare laboratory manuals in which explicit directions shall be given as to outfit and process. Among the simplest and at the same time most valuable exercises of this kind for the chapters on land forms, mention may be made of the drawing of outline maps from block diagrams of typical forms. The block diagram being an oblique bird's-eye view, and the map being seen from directly overhead, there is just enough difference between the two to require intelligence in changing the diagram to the map, and yet not to demand more than elementary geographical knowledge and simple manual skill. Maps thus prepared should always be accompanied by a descriptive and explanatory text.

Laboratory exercises should not be limited to physiography; they should be devised for all divisions of geography, for the devices by which the reality of geographical items and the truth of geographical principles are to be impressed on young pupils cannot be compressed into a text-book. They are the peculiar responsibility of the teacher and the laboratory. Just as the breadth of opportunity in a university increases with the abundance of its funds, so the variety of devices by which school children are aided in their studies will increase with the liberality of a teacher's preparation. One of the most promising of all methods towards escape from enslavement to verbal texts is the cultivation of a body of higher learning, and the encouragement of teachers to acquire larger and larger part of it, however elementary their later teaching may be.

30. *The rational element and the disciplinary value of geography increase together.*—It is very likely that one of the reasons for the general omission of geography from the list of college studies is that it does not, as ordinarily treated, afford sufficient intellectual discipline to gain a place among other subjects whose value in this respect is held to be greater. It is noticeable, however, that physical geography has a

more general representation in colleges than any other branch of the subject. Hence it may be expected that other branches will gain a place as fast as they prove themselves worthy of it, by showing that they may be as disciplinary and profitable as physical geography is. However this may be, there can be no question that the disciplinary side of geography deserves more emphasis than it has usually received in school teaching. The remarks made above as to the rank of the "tier of counties" question are pertinent to this paragraph also. There is every reason to hope that, commensurate with the development of a body of higher learning in geography, there will be an increase of the disciplinary value of school geography. Let it not be forgotten that good progress in this direction is already being made. The intelligent use of weather maps, for example, is a case in point. No wide-awake teacher of physical geography today can be content without using a series of actual weather maps in illustration of weather types; the exercises that may be based on these maps are disciplinary in a high degree. The records shown on the maps may be given a real value by comparing them with local school records. The discussion of the map records offers admirable training in induction, generalization and deduction. Exercises may be made of a very practical kind, training the hand in construction and the mind in expression. The knowledge thus gained leaves little room for credulity in a subject where credulity has long flourished. How different all this is from the old-fashioned empirical description of weather changes! Studies of this kind inculcate a really scientific method; they make for intelligence as against mere docility; they aid in opening a broad understanding of the processes of nature; and yet accessible as weather maps are today, simple as are the methods of their practical disciplinary use, it is rarely the case that they are used to their full value, even in high schools, much less in grammar schools.

Every good thing that may be said about weather maps may be said with equal value about studies of land forms, provided the study is based on laboratory material as appropriate to the needs of this division of geography as weather maps are to the other. But while weather maps are very generally available, models of land forms are relatively rare and expensive. The most disciplinary results in this division of the subject must therefore wait until models are made and used in greater number in college teaching, until the teachers of teachers become familiar with the models during their college course,

until the intending teachers of geography are made acquainted with a good variety of typical models in their own high school and normal school course, and until the models themselves are demanded for the future geographical laboratories in high schools and grammar schools. It is largely for the National Educational Association to say whether our great-grandchildren or our grandchildren or our children shall be the beneficiaries of such improvements as better laboratory equipment will aid in bringing about.

31. *Certain parts of geography are not presented in good sequence.*—With the various improvements already noted, we may expect to see a better sequence established in the order of introduction of certain elements of geographical study. As the rational method is further developed, there will be a decrease in the number of things that are empirically introduced on account of their asserted importance, even though they must be given an empirical instead of an explanatory treatment. It may be going too far to say that this class of topics will ever be as completely excluded from geography as it is from such purely deductive studies as geometry and algebra, where no one pretends to introduce a theorem or a principle before it can be logically approached by a series of preparatory steps; yet it should be noted that in subjects such as physics and chemistry, where inductive and deductive methods are combined, the sequence of topics is logical—hardly less logical than in mathematics. It is not customary to make an empirical statement concerning entropy in an elementary text-book on physics, however important the principle of entropy may be to the more advanced student. Again, a careful selection of things to be studied is noticeable in the modern books on botany and zoölogy, although this method involves the omission of all mention of many plants and animals that were formerly included in more comprehensive texts on natural history; this is because a real knowledge of a few things that may be studied observationally is held to be of greater value than a nominal knowledge of a greater variety of things.

Certain divisions of geography seem to be in need of a critical examination as to the logical sequence of their parts. There are at present too many instances in which the introduction of a topic seems to be more indicative of a desire on the part of the author of the text-book to display his knowledge than of a judicious estimate as to what is appropriate to the pupils who are to use the book. The treatment

of the tides sometimes offers illustration of this difficulty. It is as if the author felt bound to make mention of certain facts or theories because of a supposed public or scientific demand for them, even though they may involve principles which the pupils who are to use the book cannot be expected to have learned. The theory of the general circulation of the atmosphere and the effect of the earth's rotation on the course of the winds afford similar instances of the attempted introduction of relatively advanced explanations into elementary texts, because of a supposed conventional or popular demand for them. A way out of the difficulty in these cases may be found by touching very lightly on the more involved parts of the explanation, and by replacing the more difficult parts with a selection from the abundant matters of fact which can be easily apprehended, and which go far toward forming a sound basis on which real explanation may be based in later years.

The flattening of the earth at the poles is given an exaggerated importance by being included in the first account of the globular form of the earth. The explanation of the seasons is often attempted before the pupil has gained any inductive basis for the capital fact of the earth's annual revolution around the sun. Latitude and longitude are as a rule introduced too early. The methods of finding latitude that are sometimes taught include data empirically provided by the teacher. Rearrangement is needed in all such cases if geography is to become largely disciplinary.

32. *Distribution of the divisions of geography in secondary schools.*—General descriptive geography, which constitutes the body of the subject in the years before the high school, need not be subdivided according to the scheme of classification of the divisions of geography given above. It makes a beginning in all of the divisions. As at present conducted, good progress toward better methods is everywhere noticeable, but there is still room for a greater development of systematic, explanatory, and realistic treatment, as has been indicated on the preceding pages. Change in the order of parts is not seriously demanded; change in the proportion and emphasis of parts is going on in a wholesome manner, and largely in the direction here advocated. Among the results of these changes is a possible saving of time by the omission of unnecessary details, so as to permit the introduction of elementary systematic physiography in the last year before the high school. There are many reasons for this change, which I



have elsewhere set forth at some length;<sup>2</sup> but it may be here noted that the change would have the beneficial result of presenting some of the outlines of physiography to a greatly increased number of school children; and if the subject really has the educational value that is claimed for it, this would be a national blessing.

High-school geography should be of two kinds. If the feeding lower schools do not provide a course in elementary physiography, then the high school must provide it, and by preference in an early year. If no special course on regional physiography, such as the physiography of the United States or of North America, is offered, then the systematic course should give as many specific illustrations of its categories as possible. In the necessary absence of a course on systematic ontography in secondary schools, ontographic responses should be liberally introduced in connection with their physiographic controls. If, on the other hand, the high school is served by lower schools in which a good course on elementary physiography has been given by well-trained teachers to well-trained pupils, then the high school has manifestly two courses to offer. Regional physiography of the United States may be introduced in an early year so as to precede a later course in commercial geography, in advanced systematic physiography, or (should the subject approve itself when tried in colleges) systematic ontography.

The early regional course should be liberally broadened by including mention of features like those of the home country, but situated elsewhere in the world, and by abundant mention of organic responses to local physiographic features. It could thus be made disciplinary and educative in a high degree. The course on commercial geography is, if well founded on earlier physiographic courses and well developed in view of systematic ontography, destined to take an important place in the schools; but it must carefully avoid the danger of introducing too much empirical detail.

The course on more advanced systematic physiography could, if placed in a late high-school year, reach a stage of relatively rigorous discipline, for the inculcation of which more serious books, as well as better-prepared teachers and better-equipped laboratories, would be needed than are to be found today. If these suggestions seem visionary, one need only look at the extraordinary progress made in the last

<sup>2</sup>"Physical Geography in the High School," *School Review*, September-October 1900.

fifty years of our school history to count upon the realization of all these schemes in the next fifty. It goes without saying that the courses thus instituted should be so well taught that they could be built upon by still more advanced work for those students who go to college.

33. *Educational value of geography.*—There are two different standards by which the value of a school study may be measured. One is the so-called practical standard of use in life-work; the other is the more intellectual standard of capacity for enjoyment. There is no danger that this practical nation, with its marvelously rapid material progress, will fail to give due prominence to the practical side of school studies; there is some danger that the intellectual side may in a measure be neglected, from the very magnitude of our material prosperity.

The practical side of geography is best taught in a well-developed course of commercial geography placed in the later years of the high school, after earlier courses on general geography in the grades, and a course on elementary physiography either in the grades or in an early high-school year, as above suggested. Here, if anywhere, is it important that the principles of systematic ontography, developed as they should be by collegiate and university study, ought to find application. If commercial geography is to gain the place it deserves, it is of vital importance that it should be rationally taught as that part of regional geography in which man, the trader, responds so marvelously to his environing conditions. We have only to regret that the keen practical intelligence, by which the successful American of today has so greatly magnified the share taken by our country in the commercial geography of the world, finds so many analogies in the habits of the predatory species of the lower animals and in the behavior of the robber barons of feudal times. This suggests that commercial geography should be paralleled by a good course in ethics.

The intellectual profit of geography comes from the enjoyment that every active mind finds in really seeing the facts of the world about him. The great pleasure that has come to thousands of us, young and older, in recent years from the observational study of birds demonstrates the capacity, hitherto latent in that respect, of the average person for a high measure of simple, unpractical intellectual enjoyment. A corresponding pleasure is in store for those who learn, see, and appreciate the abundant facts and relationships of geography, many of which must enter into the experience of every life. If the

possibility of making a happy adjustment of oneself to his environment comes with the better appreciation of the order of nature, so much the better. It is evident, however, that the enjoyment of the opportunities of mature life will not have been increased for those whose school geography was merely a study of words in a book, or of names on a map, rather than of the meaningful facts of the world. Hence the intellectual no less than the practical value of geography will depend largely on the excellence with which it is taught.

## THE RELATION OF GEOGRAPHY TO THE SCIENCES.

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WE are passing through a period in which methods of business, of education, and of government are rapidly developing. From the centralization of many diverse units under one administration, as in the change from the college to the university, from the company to the syndicate, from the kingdom to the empire, there results a broadening of interests. But this very aggregation of interests and power gives opportunity for, and demands, more detailed study and more careful management of the component parts. The small college, at which only a few general branches of learning were taught, is giving place to the greater university, in which all branches of learning are represented and yet the minutest detail is taught in each specialty. The individual owner of the blast furnace or steel-rail mill is being replaced by the great syndicate, which mines the fuel and the ore, transports them to the mill, and works the product of the latter into finished commercial form; yet the very magnitude of the syndicate's interests results in the more scientific development of its resources and products through the medium of trained specialists, who supervise the details of every branch of its industries.

This spirit of the times is expressing itself in discussions by our educators concerning the place of geography among other sciences. That the reaction on geography of the study of other branches of science has led to discussion of this subject is good cause for congratulation.

Some regard geography as scarcely a composite science, but only a mosaic of others, having little right to a place among such specialized sciences as geology, astronomy, botany, ethnology, etc., from each of which it borrows something. Others conceive it to be one of the general or administrative sciences, correlating the truths of the more detailed sciences and knitting their results into a harmonious whole.

It will be well, in the beginning, to recall the derivation of the name and to observe the danger of a too literal translation. "Geography" has generally been held to be a "description of the earth," and as

such even the first of great modern geographers, Alexander von Humboldt, considered it. He was probably the first to point out that the different special natural sciences needed to be supplemented by a generalizing science which should bring together the isolated results of the others and trace from them the general features of the world. He said that the results of scientific research should be considered in their vast relations to mankind, and showed that geography does this. More recently Karl Ritter, another of the founders of the modern German school of geography, has adopted as a liberal translation of "geography" the word *Erdkunde*, which may be defined as "knowledge of the earth." By this he means that geography is not so much a mere description as a subject full of scientific problems requiring solution.

Lieutenant-General R. Strachey, one of the pioneer Englishmen in modern geographic methods, has said: "I therefore claim for geography, in the sense that I have spoken of it, a place among the natural sciences, as supplying the needful medium through which to obtain a connected and consistent conception of the earth and what is on it, on the importance of which I have already insisted. In this respect the position of geography may be looked on as analogous to that of mathematics." Another Englishman, Professor H. F. Tozer, who is primarily a student of the historical side of geography, claims that geography "is the most central in its position of all the sciences, standing as it does half-way between history, sociology, and the other studies which relate to man, on the one side, and those which deal with the composition of the earth, which is his dwelling-place, such as geology, on the other; so the history of geography, especially that of its earlier stages, when these cognate subjects were still in their infancy, is fruitful in information relating to them." Still another English geographer, Professor E. C. K. Gonner, in considering commercial geography, describes geography as "a study of the environments of man." He holds that its function is to observe, arrange, and describe the physical conditions under which man lives, and to indicate the part which these conditions play in determining the course of his development and the nature of his occupation.

Finally, reference might be made to the writings of Powell, Richt-hofen, and Davis, among the more prominent of the modern school of so-called physical geographers, in which may be found conceptions of geography in its special relation to geology and meteorology; or to the writings of Réclus, who emphasizes the ethnologic side of

geography, and of Freeman, who has shown it to be the most important factor in the history of nations.

The student will thus discover that geography is not merely a patchwork of other sciences, but that, as a rule, each geographer is a specialist, who, while indicating the relations of his favorite specialty to the other sciences, magnifies his own, be it geology as with Suess, ethnology as with Réclus, political geography as with Ratzel, historical geography as with Tozer, or commercial geography as with Gonner.

So it has ever been with each of the more restricted sciences. Not so very long ago geologists based their lore on biology, and palæontology was the keystone of their theories and their measure of time. They then took up the dynamics of geology and founded their pet theories on vulcanism. Now they have become geomorphologists, and the surface or physiographic forms, as produced chiefly by erosive action, are the key by which they unlock hidden mysteries. The lithologic composition of the rocks, revealed by the microscope, furnishes their basis of classification and measure of time. Hence the modern school of geologists, recognizing the geographic (topographic) side of their science, are trenching so closely on the domain of what they conceive to be geography that many of them have come to believe, as do some historians, meteorologists, and ethnologists, that the science of geography has ceased to exist.

This brings us to a realization of how imperfectly the true meaning of the term "geography" is as yet understood, not only in our own country, but even in Germany, the most advanced of all countries in geographic teaching. It is the geologists whom we must gratefully credit with having forced the issue, through mistaking one of the components of geography, namely topography, for the whole, and thus limiting the science to its orographic phase. This is clearly shown in the statement made before this association last year by Professor W. H. Norton, who aptly characterized the new geologic cult, geomorphology, as "the child of geology and geography," and who properly decided that "the overlap land of geomorphology may be claimed by geology with as sure a right as any of its other provinces, such as palæontology." If we substitute here for "geography" the name intended, "topography," and also in his question, "Should land forms be taught in high schools chiefly as physical geography or as geology?" substitute for "physical geography" "topography," we arrive at a true conception of the difficulties raised by topographic geologists, if I

may so characterize them. It is worthy of note that Professor Norton says of this predominant influence in present-day so-called geographic thought that the "professors of physical geography belong, notwithstanding, to the brotherhood of the hammer." It is but natural that the leader in this school, Professor W. M. Davis, should, in his admirable treatise on land forms, unconsciously realize the narrowness of the physical side of geography alone by pointing out the application of the science to the life of plants and animals and of man, thus placing himself among the first of his cult to appreciate that geography is something more than geomorphology.

The true place of geography has now been indicated, though few geographers have been or will be so comprehensive of grasp and so broad in culture as to compass the whole subject and favor no specialty. Dr. Wm. T. Harris, United States commissioner of education, best indicated the full scope of geography as a science when he wrote: "Geography unites the study of the natural elements, land and water, climate and productions, with the study of man's present conquest and use of the same." Professor Tozer, in the statement previously quoted, characterized geography in similar terms. The Committee of Fifteen also indicated in their report the important position of geography among the sciences when they referred to it as one of the most important of all branches taught in the common schools, "a composite science or conglomerate of several sciences united with several arts." This last phrase clearly indicates that geography is an intermediary science—that its true functions are to correlate the sciences—physical, natural, commercial, historical, and mathematical—with the arts. It is indeed true that one of the interests in the many-sided science of geography is lost if the student limits his investigations to the surface of the earth and its envelopes of air and water, and fails to consider the human side—the relation of man to his habitat, and its reaction upon him, as shown in the social and political history of the race. As Humboldt has expressed it, "the unity of a physical description of the world is no other than that found also in the study of history." Both are exact sciences, dealing not in doubtful premises nor dependent on unproved theories, but founded on facts empirically determined.

As recently pointed out by Dr. Martha Krug Genthe, "the geography of plants or animals is, then, as different from descriptive botany and zoölogy as the geological knowledge of the earth is from

mineralogy." Hence the physical description of the world by a geographer of Humboldt's type is "not to be confounded with a so-called cyclopædia of natural sciences." In such geographic writings details are studied only in their relation to the whole as parts of the world's phenomena. In refutation of the charge that geography is but "an agglomeration of fragmentary knowledge borrowed from a dozen other sciences," the same writer has well shown that there is "no science now known in which one mind can have an equally complete command of all subdivisions; even the greatest men in medicine, zoölogy, history, etc., are specialists in some definitely limited areas." Hence a physician is still a scientist, though he be not a specialist in laryngology or gynæcology; and a place in science is granted to the geologist, though he be not a palæontologist.

Perhaps the relation which geography bears to kindred sciences may be best likened to that borne in these days of specialization by civil engineering to allied branches of the engineering profession. The assertion is frequently made that the parent profession, civil engineering, has ceased to exist; that it is but a hash of its component specialties—hydraulic, sanitary, topographic, railroad, bridge, mining, electrical, and mechanical engineering—from each of which it borrows a little. The absurdity of this becomes evident when we consider that the electrical engineer who builds a rural trolley line or develops electric energy from water power, and the mining engineer who drives a tunnel or constructs a tramroad, may with equal truth be said to be practicing a composite calling composed of civil, hydraulic, and mechanical engineering. In this day of specialization and of administrative concentration, it is but natural that the foremost workers in scientific as in commercial pursuits, jostled by the elbows of the devotees of sister-sciences, should give expression to their "community of interests" feeling by endeavoring to absorb or attach all that comes in touch with them. Civil engineering still remains the parent or administrative engineering profession, which correlates the wisdom of its component branches by utilizing on the greatest works the services of their specialists. Yet, in the beginning, the greatest of our civil engineers were themselves specialists, and they may still be called upon to lend their special services to mining, hydraulic, and electrical engineers, or to architects.

It is so with geography, the oldest of sciences, which properly bears the same relation to the natural sciences that civil engineering



holds to the allied engineering professions, or that the president of a syndicate holds to one of its component, yet semi-independent, corporations. It is an administrative or correlating department, yet at times lending its knowledge of the specialty from which it springs to the development of kindred branches in the world's work.

And this brings us to another division of the subject—the place of geography in education—which, it seems, must be considered in this discussion. The teaching of geography in the more advanced grades should be so planned as to direct observation to the various natural features and physical phenomena, and to the reaction of this environment on man and his occupations. It should also give attention to the recording of such features in the form of concise and systematic reports. The civil or mining engineer, lawyer, historian, promoter of financial and commercial undertakings, geologist, ethnologist, biologist, meteorologist, and persons engaged in kindred professional occupations, are constantly called upon to conduct investigations and to submit reports which require a preliminary description of the natural features and the arts of the region under consideration.

An examination of the great government survey reports, the works of historians, or the projects of civil engineers will disclose the value of higher geographic training. A large proportion of our civil and mining engineers have, at some period in their careers, had to investigate and report upon projects in localities little known. The writer is one of hundreds who have made preliminary surveys for railways, irrigation projects, or plans for river and harbor improvement, or for the development of mineral resources in Mexico, China, British America, portions of our far West, or in better-known and better-developed parts of the earth. Their reports to the stockholders of the companies or other employers, if consisting only of a brief statement of the engineering problems immediately involved, furnish few of the data necessary to enable the projectors of such enterprises to determine the financial possibilities or to estimate the resources of the region. But such reports convey an entirely different meaning and show the projects in an entirely different light when preceded by a concise statement of the geography, including an account of the climate; the water resources for power, irrigation, or domestic use; the timber resources; the geology, especially the stone available for structural purposes; the nature of the physical wealth; the biology, including the useful flora and fauna, wild or domestic; and the ethnology, especially the

character and pursuits of the people and their availability as laborers or producers.

An inspection of the series of brochures published by the Biological Survey of the United States Department of Agriculture, and of kindred reports emanating from that department, or of the reports of the United States Geological Survey, particularly those from the geologic and hydrographic branches, or of the earlier reports of the Pacific Railroad surveys, reveals clearly the value of geographic training. Few of the writers of these reports had special geographic instruction, and, therefore, only a few had sufficient appreciation of geography in its broadest sense to enable them to systematically describe and discuss all the natural and human phenomena of the region under examination. The reports of those few who have such appreciation are in a class by themselves; they stand apart from the mediocre lists of mammals or birds, agricultural lands, or water, forest, or mineral resources. The reader obtains a clear and connected conception of all the natural features of the region and of their relation to man and his works, and is at once enabled to appreciate more definitely and comprehensively the meaning and the details of the particular work under consideration. In scarcely any other field of work, unless it be in engineering and in historical and commercial writing, is the value of a thorough geographic training more clearly evidenced. It is to the thoroughness of their geographic education throughout the whole of their school and college career that the Germans are indebted in large measure for the success of their commercial travelers and official representatives in introducing their wares among foreign peoples. These representatives know beforehand much of the resources and history of the countries to which they may be sent, and are thus able to quickly sympathize with and appreciate the peculiarities of the inhabitants and to adapt themselves thereto.

From the foregoing it is evident why the more valuable and lasting reports on all of the great scientific and commercial problems of a country are rarely those written by a specialist, but those written by the man of broader geographic or administrative training; and consequently, in such undertakings, the man so taught becomes the leader and the executive, while he relegates to assistants in allied specialties, or to public institutions, the classification of the data which he has collected.

The erroneous inference should not be drawn from what has

preceded that the writer is attempting to claim for the science of geography a superior place among the allied branches of learning. While his claim is that geography is worthy of fully as great and as distinct a place as the other sciences, he believes that it is entitled to greater prominence than any other in the school and college curriculum. It should not be taught according to the old method—the parrot-like memorizing of long lists of names of places and things—nor yet according to the new—that form of physical or descriptive geography which has been characterized, on one hand, as geology, and, on the other, as a hash of other sciences.

The basis of geographic science or teaching is the map; hence geography is an exact and not a theoretic science. The essential in its every phase is place, and the consequent ability to visualize the place relations of objects on the face of the earth. For the broader or more advanced geographic studies the base map is necessarily but a much-generalized plan in outline. The basis from which this has been reduced is the topographic map, which Henry Gannett has aptly called the “mother-map.” While the latter, because it depicts in detail all the changes in shape and slope of the surface of the earth, is the necessary base map for the study of many of the more advanced branches of geographic science, yet in consequence of its very detail it is the medium through which the first rudimentary geographic teaching can best be imparted.

Armed with a topographic map of the surrounding country, the teacher of nature studies can take the class on field excursions and, while imparting some of the rudiments of zoölogy, botany, or geology, he can at the same time indicate the relations of the various phenomena to one another and to their environment. He can point out the influence of a hill of particular outline upon a snow-drift, the run-off of water and its erosive action on the character of the soil, and the resulting growth of plants, and hence of animals. Finally, he can direct attention to the reflex influence of these upon man and his pursuits, and the places in which he has located roads and villages. The whole will open wide vistas for future indoor study, and will beget the impulse to discuss the results with geographic breadth of view and accuracy of record in written compositions.

This form of geographic instruction may well continue through several years, as the pupil advances in knowledge of elementary mathematics, astronomy, zoölogy, botany, physics, history, and drawing. He

may now supplement his local field studies with the drawing of maps, which will bring into action his knowledge of exact and relative dimensions, and on these he may, as his instruction broadens from the home environment to other lands, the whole earth, and finally to the universe, indicate and discuss the relative position and influence upon each other of all natural, physical, and human phenomena.

The science of the maker of the geographic base maps, or of the cartographer, rests on a foundation of higher mathematics, including geodesy and astronomy. In like manner the science of topographic surveying is dependent on some knowledge of these and of the various branches of surveying. Hence these branches of geographic teaching should come in the more advanced college grades. The topographic map shows not only the outline plan of cultural and of water features, but also in detail the slopes, shape, and conformation of the surface of the earth. Hence it is the essential base map on which the geomorphologist, forester, agrostologist, or hydrographer records and discusses his more intricate studies. Consequently this phase of geographic teaching may wait until such time as the student shall have learned something of geology, botany, physics, and meteorology, as may the study of historical, political, or ethnologic geography wait until some instruction has been given in the sciences which bear these names.













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